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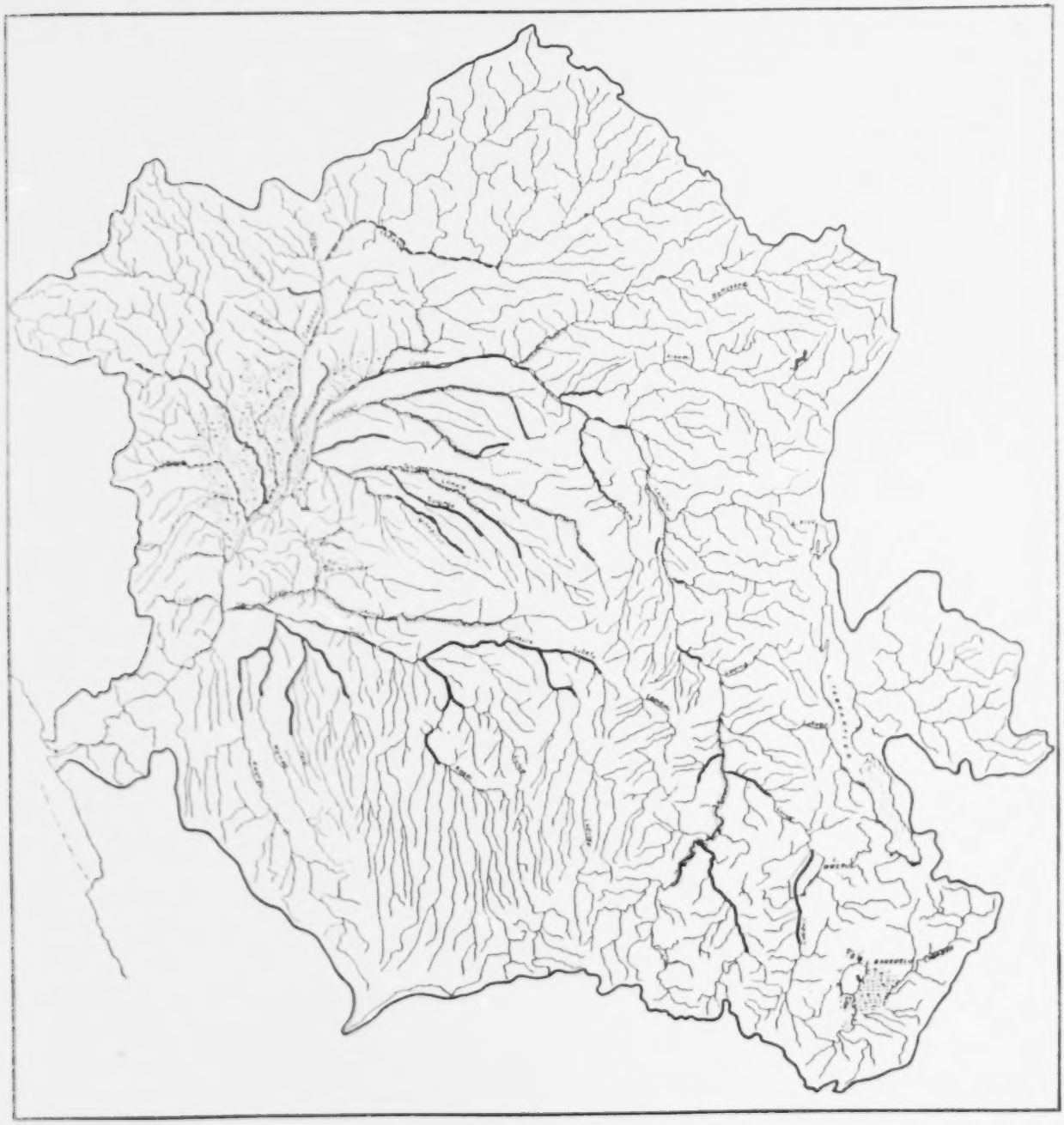
STUDY ON THE ESTABLISHMENT OF AN INTERGOVERNMENTAL ORGANIZATION FOR THE DEVELOPMENT & EXPLOITATION OF THE CONGO / ZAÏRE RIVER BASIN RESOURCES



ECONOMIC COMMISSION FOR AFRICA

FOREWORD

This study has been undertaken by the Transport, Communications and and Tourism Division of the Economic Commission for Africa (ECA) at the request of the Governments of the three countries bordering the River Congo/Zaire. The study was prepared during the months of October 1983 and March 1984 by Mr. Robert T.N'Daw, a consultant for ECA, under the direction of Mr. Tchouta Moussa, Director of the above mentioned ECA Division and Mrs. T.W. Kacperska, Chief of the Transport and Tourism Section of the Division. The consultant's work was supervised by Mr. Rajohnson, economic affairs officer of the Division.

The Natural Resources Division collaborated in the study and the Administration and Conference Services Division of ECA (Reproduction Section) helped in reproduction of the document.

The present report and its annexes have been approved by the Transport, Communications and Tourism Division of ECA as a document to be submitted to the Governments of the States bordering the Congo River-Zaire.

The study reviews the current situation of the Basin and its current international status, analyzes the possibilities for developing and exploiting the River and its tributaries in an integrated manner and proposes, on the basis of its observations, ways of putting these possibilities into concrete action. The following draft proposals figure in the study:

- A detailed draft international convention on the River and a draft general development policy;
- The organizational structure and draft international statute of the joint decision-making, planning, control and implementation bodies which will be responsible for enforcing the Convention relating to the River, implementing the proposed general development policy and executing the inter-State programme for co-operation within the Basin;
- Draft operating budget and a system of cost distribution;
- The first programme for co-operation in the Basin.

The draft international Convention relating to the **River**, the draft international Convention relating to the establishment of joint institutions and the draft of the general development policy are attached to the general report as annexes, as well as texts of old international Conventions still in force (the Berlin Act of 16 February 1985, the **Brussels** Declaration of 2 July 1890, and the Convention of Saint-Germain-en-Laye of 10 September 1919). Extracts from the ECCAS and ZEP/PTA treaties referring to commitments made by the States at the subregional level are attached to the report as annexes. The basin itself, by its sheer size and resources covers various continental subregions.

Various maps and diagrams are included in the text and also in the annex to illustrate the realities, the potential and the attractive possibilities for inter-State co-operation. A map showing the waterways and the hydroelectric power potential of the Basin was prepared during the course of the study. A report is presented in the annex for each of the countries visited.

STUDY ON THE ESTABLISHMENT OF AN INTER-GOVERNMENTAL ORGANIZATION TO DEVELOP AND EXPLOIT THE NATURAL RESOURCES OF THE BASIN OF THE RIVER

1. General background: Origin of the project, terms of reference, performance of the mission.

2. Objective of the study and methodology

3. Present situation of the Basin

   3.1 General description of the Basin

   3.2 Current status of the river and its tributaries

   3.3 Existing organizations directly involved in the development of the River and its tributaries

   3.4 Present state of development of the River and its tributaries

      3.4.1 Navigation and ports

      3.4.2 Hydroelectric power

      3.4.3 Irrigation

      3.4.4 Opening up of the Basin

   3.5 Current development projects

      3.5.1 Navigation and ports

      3.5.2 Hydroelectric power

      3.5.3 Irrigation

      3.5.4 Opening up of the Basin

4. Prospects for jointly developing and exploiting the River and its tributaries:

4.1 General background
4.2 General development
4.3 Opening up of the Basin
4.4 Energy and industry
4.5 Food self-sufficiency
4.6 Environment
4.7 General functions

5. Proposed plan of action
5.1 Basic legal instruments
5.1.1 International Convention on the River and its tributaries
5.1.2 General development policy
5.2 Joint institutions
5.2.1 Joint decision-making and control institutions
5.2.2 Joint planning and implementation institutions
5.2.3 Joint institutions for integrated development
5.2.4 Operating budget
5.2.5 Sharing of costs
5.2.6 Conclusion: draft terms of reference of the joint institutions

6. Conclusion - Recommendations

7. Annexes
7.1 Terms of reference of the study
7.2 Draft of the convention relating to the status of the River Congo.
7.3 Draft of the convention relating to the establishment of the joint institutions in charge of developing and exploiting the resources in the basin of the River.

7.4 Draft of the decision defining the General Policy for developing the basin of the River

7.5 Organization chart of proposed institutions

7.6 Diagrams

7.6.1 Situation of the Basin

7.6.2 Rainfall

7.6.2 (bis) Evapotranspiration

7.6.3. Land use

7.6.4 Map of the Basin: Hydroelectric power potential and navigable waterways

7.7 Country reports

7.8 Extract from the ECCAS and ZEP/PTA treaties

7.9 International conventions in force

(1) The Berlin Act of 16 February 1885

(2) The Brussels Declaration of 2 July 1980

(3) The Convention of St. Germain-en-Laye of 10 September 1919

7.10 Bibliography

1. GENERAL BACKGROUND

The tripartite commission comprising Congo, Zaire and the Central African Republic decided at its meeting held in Bangui from 18 to 21 July 1978, to establish a joint commission to the river basin.

The three governments requested ECA to carry out a study for the establishment of a Commission and to submit a report of the study to the governments concerned.

ECA drew up terms of reference for the study (Annex No. 1) and submitted it in July 1983 to all the States bordering the River and its tributaries and to neighbouring States whose goods are transported by way of the river and rail network within the Basin.

On the basis of the terms of reference, ECA undertook surveys and studies during the period from October 1983 to March 1984.

It was not possible to adhere to the work programme laid down in the terms of reference:

(a) Commencement of the study was delayed for three months;

(b) ECA and the specialized services of the riparian States were unable to fulfil the task of "gathering" all the necessary data (see Chapter 4- Terms of Reference).

Consequently, the consultant undertaking the study was requested to collect data from six of the riparian states.

This task would not have been successfully carried out without the assistance of the technical authorities and services of the riparian states. The information in this study is thus limited to the basic data available at ECA and to that gathered during the mission to the riparian states.

Data collection in the States was carried out as follows: the Central African Republic: 28 October to 7 November, Congo: 7 to 15 November, Zaire: 15 to 26 November, Zambia: 25 November to 6 December. The consultant was unable to visit Angola and the Republic of Cameroon due to lack of response from these countries to ECA's request seeking agreement to launch a mission.

Time and resource limitations did not make it possible to conduct missions to Rwanda, Burundi and Tanzania.

The period from 7 December onwards was devoted to analyzing the collected data and writing up this report at the ECA headquarters.

In view of the problems mentioned above, the last part of the work plan envisaged earlier was delayed. The submission of the report and the meeting of the preparatory committee could not take place until the end of February and it was not until the end of March that it was possible to finalize the draft report.

2. OBJECTIVE OF THE STUDY AND METHODOLOGY

2.1 Objective of the study

In conformity with the directives of the Lagos Plan of Action and the Final Act approved by the Assembly of Heads of State and Government of the Organization of African Unity in April 1980, in the spirit of the Mar del Plata Action Plan of March 1977 on water resources and the current United Nations Transport and Communications study; the Governments of the People's Republic of Congo, the Central African Republic and the Republic of Zaire, decided to call upon the riparian states to co-operate closely to jointly develop and exploit the resources of the Basin, and to create a joint commission for this purpose.

Thus, the objective of this study is to assist the Governments of the riparian states to plan and to establish an efficient body capable of promoting the joint development of the Basin of the River and the exploitation of its resources for the benefit of all the riparian states.

2.2 Methodology

The experience in Africa during the past twenty years shows that in pursuance of the common will for unity among African countries, institutions for co-operation have most often been established on very general basis initially, only to find out later in which specific area member States could come to agreement for action. This has often led to a proliferation of authorities and ineffectiveness of the institutions to the States. In this connection, it would be worthwhile to refer to the Lagos Plan of Action (Chapter VIII) in which the

African Heads of State and Government took note of this phenomenon and proposed solutions to the problems.

Thus, the methodology of the present study derives from the fundamental idea of establishing the broad outlines of the function which the future organization would be called upon to fulfil in time (short, medium and long term) and in space (3.7 million sq. km plus the area of influence of the basin) and thereafter to define the structure most suitable for carrying out this task. The study also aims at finding out the most judicious approach for speeding up and harmonizing the development of the basin through co-operation and gradual integration of its development and through joint exploitation of its resources as well as selecting the main areas of activity which would be most advantageous, at present, for the riparian states to unite and concentrate their efforts on. In addition to the main general principles already approved by the Heads of State and Government, this approach makes it possible to ensure, right at the onset, that member States are in agreement on a long term general policy of development (its technical and economic aspects) of the proposed organization and to determine the specific activities and projects which the States want to implement jointly in the short, medium and long term. The specific structure of the joint organization can then be defined in a practical and operational manner while still leaving room for increasing areas of co-operation in the future as and when required by the member States.

3. PRESENT SITUATION OF THE BASIN

3.1 General description

The Zaire/Congo basin is the biggest in the African continent and the second biggest in the world after the Amazon. It covers an area of 3,700,000 sq. km in the territories of nine countries:

	Angola	Burundi	Cameroon	CAR	Congo	Rwanda	Tanzania	Zaire	Zambia
Area of the Basin in the country (in sq.km)	285,000	13,000	98,900	400,00	255,000	4,900	170,000	2,310,000	175,000
% of the surface area covered by the basin in each country	7.7	0.36	2.7	10.9	6.9	0.13	4.5	62.1	4.7

The river is estimated to be 3,100 km long and is considered to have its source in Chambechi, which is located in Zambia, south of Lake Tanganyike. Chambechi river flows into Lake Bangwelu (5,000 sq. km) and then into the Luapula, which flows into Lake Mweru 94,340 sq. km). This emerges from Lake Mweru as the Luvua which joins with the Lualaba, a major tributary of the River.

Lake Tanganyika (35,000 sq. km, altitude of 775 m) is within the basin: the Lukuga flows into the Lualaba and Lake Kivu (2,700 sq. m, altitude of 1,460 m) flows into Lake Tanganuika through the Ruzizi.

The main tributaries on the right bank are the Kwa-Kassai, the Tshumpa, the Lomani, and those of the left bank are the Aruwimi, the Oubangui and the Sangha.

The tributaries and sub-tributaries not mentioned are listed in Chapter 3.4 and shows on the map of the basin attached as an annex.

The River has a number of rapids and waterfalls which mark out three navigable reaches (maritime, middle and upper reaches). It flows into the Atlantic Ocean through an area of narrow gorges and thirty-two waterfalls which has been named the zone of cataracts and which is one of the areas with the highest potential in the world for hydro-power development.

The equator passes through the northern third of this enormous basin which enjoys an exceptionally good rainfall as well as alternating seasons north and south of the equator. The average annual rainfall ranges from 1,200 mm in the extreme south and the east to more than 2,000 mm in the centre and then decreases to 1,200 mm in the extreme north of the basin.

The river network therefore drains large volumes of runoff water which, excluding seepage, represent the difference between the rainfall (annex No. 2) and evapotranspiration (annex No. 2 bis).

This together with the wide area of the basin explains the high annual avarage discharge of 1,325 billion cu.m. and an annual average rate of flow of 38,000 cu.m/sec at the mouth of the river, which represents 30 per cent of the total volume of surface water in the African continent.

Due to the alternating seasons north and south of the equator and the occurence of two rainy seasons in the area around the equator, the discharge of the river during low water periods is quite high, approximately half of the discharge during high water periods.

Consequently the river is naturally navigable all year round and has a very high hydro-power potential. The tributaries of the river which are located mainly in the equatorial zone also have these exceptional conditions, whereas those which drain the north and south tropical zones have severe low water periods which make natural navigation only seasonally possible and cause wide annual variations in the hydro-eelctric capacity.

The basin of the River is a vast bowel shaped peneplain with a depression in the centre.

The western border of the plateau is the lowest part reaching an altitude of only between 150 and 350 km above sea level.

The lowest part of the depression (an altitude of 340 m) which is the area around the confluence of the Congo and Ubangui rivers towards Lakes Mai N'Doube and Tumba has the remnant of a vast fresh water inland lake, forming a gigantic flood zone similar to an inland delta.

The highest point of the basin is the eastern border: it is the west block of the Rift Valley, that has resulted from a vast tectonic upheaval which faulted the continent in a north-south direction.

The great faults in the region have led to the formation of gorges running north-south (Graben) bordered by an area characterized by volcanic eruptions and tectonic upheavals. These gorges are occupied by giant lakes and bordered by mountain ranges: the long Milumba range and the Kivu mountains form the eastern edge of the Congo Basin. One of the largest lakes in the Rift Valley, Lake Tanganyika flows into the river. The northern and southern limits of the basin are demarcated by high plateaus.

The highest point in the eastern side of the basin is 2,500 m; in the south and south western side 1,500 m and in the north and north western side 800 m.

The Upper Reaches

The Lualaba is usually considered as the Upper River. Its source is 1,420, up in the Shaba plateau where it is a turbulent mountain stream until it enters the Upemba, a large depression, whence it slows down and forms numerous lakes and swamps (Upemba, Lukamga). It then flows south-North and this part of the river is characterized by calm reaches separated by rapids and falls. The most important ones are the portes d'Enfer, downstream from Kongolo and the Stanley Falls just before Kisangani. The Luvua which is the main river in terms of flow meets the Lualaba near Ankoro; the Luvua which drains Lake Tanganyika joins the Lualaba further downstream above Kabalo. Then several smaller tributaries flow down into it from the west bank of the Rift Valley. Its rate of discharge at this point is 5,000 - 8000 cu. m/sec with the lowest water level in August and the highest in April.

Middle reaches

Downstream from Kisangani its name changes and is known as the River Congo/ Zaire. The Lomami a large tributary, flows into it from the left bank and the Arumimi enters it further downstream from the right bank.

At Kisangani it changes its course and flows westwards and then curves south-west wards as it approaches its confluence with the Oubangui which flows through an area within Northern Tropical climatic conditions and discharges 400 to 8,000 cu.m/sec into the river. The very lowest water period is March and the highest in October. The river bed which is 10 km wide is often congested with sand banks and islands.

The Kwa-Kassai, a very large tributary with a rate of flow almost identical to that of the River (6,000 to 9,000 cu. m/sec) flows into the latter about 150 km from Kinshasa. After the confluence of the River and the Kwa, the course of the River becomes narrower until it enters the Malebo Pool, a vast depression of 25 by 30 Km, where it spreads out again.

The cataract zone

Further on, it flows through the first rapid of the cataract zone (Kinshasa) where the river cuts through an escarpment on the western side of the basin, with 32 cataracts over a distance of 350 km and drops 265 metres with several meanderings as it cuts across the Mayombe mountains.

Maritime zone

The River widens again after Matadi. At Boma it is 4,600 m wide and its estuary is 10 km wide. Throughout the maritime zone the River runs through narrow gorges with escarpments rising about 500 metres above the water. When it reaches the sea it forms an under current which is visible up to 500 km off the coast. In the middle of the maritime zone the River frequently shifts its course and there are several alluvial deposits which require constant monitoring, dredging and buoying ensure navigability. Vegetation ranges from dense equatorial forest to savanah land towards the extreme north and south. The altitude modifies the climate and vegetation on the high plateaux and the mountains forming the east rim; annex No. 7.6.3 gives a rough idea of vegetation and land use.

The total population of the basin is about 38,000,000, with the most densely populated areas being found in the Eastern Highlands (Kuvu, Rwanda, Burundi). The population of the basin represents 46.5 per cent of the total population of the riparian States and the surface area of the basin represents 55 per cent of their total land mass.

At a glance, the relative importance of the basin for each of the riparian States is as follows:

	Surface area of countries	Surface area of countries within the Basin	% of countries in the Basin
1. Angola	1 247 000	285 000	23
2. Burundi	28 000	13 000	47.5
3. Cameroun	475 000	98 900	21
4. Central African Republic	623 000	408 000	65.5
5. Congo	342 000	255 000	74.5
6. Rwanda	26 000	4 800	18.5
7. Tanzania	945 000	170 000	18
8. Zaire	2 345 000	2 310 000	98.5
9. Zambia	753 000	175 000	23.2
Totals and average	6 784 000	3 720 000	54.8

1/ Population figures for Angola to be verified from the

2/ The additional 0.4% results from the fact that figures

Population situated of countries (inhabitants)	Population of country within the Basin	% of the population of the Basin in each country	% of the population of each country living within the Basin	Per cap GNP
(8 136 000)[1/]	(2 736 000)	7.13	(33.6)	470
4 100 000	1 248 000	33.25	30.4	200
8 400 000	475 000	1.23	5.65	670
2 300 000	1 531 173	3.99	66.6	300
1 600 000	1 007 572	2.62	62.9	900
5 200 000	921 600	2.4	17.7	200
18 700 000	2 800 000	7.3	15	280
8 300 000	26 600 000	69.35	96	220
5 800 000	1 036 000	3.7	17.9	560
82 536 000	38 354 754	100.4[2/]	46.47	

Authorities of this country (not visited).

were rounded off to two decimal points.

River	Location	Dr. area	Precipitation	Runoff	Evapotranspiration	Runoff coef.	Water yield	Mean annual discharg
Unit		km^2	mm	mm	mm	%	l/s/km	m^3/s
Chambeshi	above Bangweulu Swamps	43 830	1 143	241	902	0.21	7.7	337
Interbasin	Bangweulu Swamps	57 664	1 229	59	1 170	0.05	1.9	110
Luapula	Below Bangwelu Swamps	101 494	1 191	138	1 053	0.12	4.4	441
Interbassin	Bangwelu S. Mweru L.	71 372	1 165	136	1 029	0.12	4.3	307
Luapula	at Mweru L.	172 866	1 181	138	1 319	0.12	4.4	754
Kalungwishi	Mweru (mouth to)	26 696	1 143	164	929	0.14	5.2	139
Interbassin	Kalungwishi-Lualaba	123 734	1 160	132	1 028	0.11	4.2	520
Luvua	Confluence with Lualaba	296 600	1 172	136	1 036	0.12	4.3	1 274
Lualaba	Uzilo	16 300	1 100	200	906	0.18	6.3	100
Luvua	Cornet Falls	11 980	1 180	126	1 054	0.11	4.0	48
Lualaba	above Luvua	187 800	1 130	110	1 020	0.10	3.5	651
Lualaba	below Luvua	484 400	1 156	126	1 030	0.11	4.0	1 931
Interbasin	Luvua-Lukuga	7 200	1 125	108	1 017	0.10	3.4	24
Lualaba	above Lukuga	491 600	1 155	125	1 030	0.11	4.0	1 955
Lukuga	mouth to Lualaba	270 900	1 062	32	1 030	0.03	1.0	271
Lualaba	below Lukuga	762 500	1 122	91	1 031	0.08	2.9	2 226
Interbasin	Lukuga-Lowani	277 083	1 905	602	1 303	0.32	19.1	5 295
Lualaba	above Lowani	989 583	1 399	239	1 160	0.17	7.6	7 521
Lowani	mouth	95 830	1 675	274	1 401	0.16	8.7	837
Congo	Confluence Lowani, Lualaba	1 085 413	1 422	249	1 179	0.17	7.7	8 358
Interbasin	Confluence-Ubangi	463 000	1 875	482	1 393	0.26	15.3	7 126
Congo	Above Ubangi	1 548 413	1 559	315	1 244	0.20	10.0	15 484
Ubangi	mouth	754 830	1 597	248	1 349	0.16	7.9	5 936
Congo	below Ubangi	2 303 243	1 569	293	1 276	0.19	9.3	21 420
Interbasin	Ubangi-Sanga	9 580	1 750	355	1 395	0.20	11.3	108
Congo	above Sanga	2 312 823	1 561	293	1 268	0.19	9.3	21 528
Sanga	mouth	213 400	1 580	362	1 218	0.23	11.5	2 471
Interbasin	Sanga-Kwa	109 500	1 750	375	1 375	0.21	11.9	1 304
Congo	Kwa	2 635 723	1 581	301	1 280	0.19	9.6	3 303
Kwa	mouth	881 887	1 538	350	1 180	0.23	11.1	9 873
Congo	below Kwa	3 517 610	1 570	314	1 256	0.20	10.0	25 176
Interbasin	Kwa-mouth of Congo	89 840	1 300	220	1 080	0.17	1.0	629
Congo	mouth	3 607 450	1 561	313	1 246	0.20	9.9	38 805

2. The hydroelectric power potential is greater than the medium-term requirements of the continent.

3. The network of navigable waterways is the largest in the continent because of the long low water periods resulting from the exceptional climatic conditions (more than 17,000 km of navigable waterways).

4. Mineral resources (both exploited and unexploited) are of world wide importance and the fact that there is a great variety of them will make it possible to plan for balanced industrialization.

5. Forest resources are still abundant but must be exploited judiciously.

6. The whole basin has soils which are potentially suitable for agricultural use and the fact that there are two rainy seasons in the centre is an added advantage.

7. There is a great potential for the development of livestock

In a nutshell, economically this basin is probably the richest zone in the African continent. A country by country review of the principal resources appear as annexes.

3.2 Current statute of the river and its tributaries

The river and its tributaries are still governed by the Act of Berlin (16 February 1885) the Declaration of Brussels (2 July 1890) and the Saint-Germain-en Laye Convention (10 September 1919).

When the States concerned attained independence the colonial powers handed over sovereignty of these territories to their former colonies.

This means that the former international agreements covering those territories which have not been denounced by their Governments, are recognized by the national authorities and are therefore still in force.

1. The relevant texts are to be found in annex No. 7.2. A study of the texts shows that the conventions are contractual commitments undertaken by the signatory nations in accordance with the very concept of International Law.

Since these signatories still exist and as far as we know no amendments have been made to the original texts in substituting old by new names of African nations there is a vivid paradox that the former colonial powers still enjoy freedom of navigation and equal treatment on the rivers and streams of Africa. Furthermore, it is not clear whether the African countries concerned enjoy this same freedom on each other's rivers.

2. International law governs relations between nations. It should therefore adapt itself to the developments taking place in the world. There have been two major developments on the African continent:

- Political independence
- Awareness of the need for economic independence and economic union which will make it possible to reduce the present dependence of African nations on developed countries and work towards balanced internal and external interdependence.

3. As far as the river basin is concerned, soon after independence several riparian States began to conclude bilateral or trilateral co-operation and integration agreements.

For example, the Congo and the Central African Republic signed an agreement on navigation between Brazzaville and Bangui and established a joint service for

maintaining the navigable waterways. Zaire and Angola did the same in respect of the maritime reach of the river. These developments must definitely lead to the amendment of former colonial agreements which must be revised to reflect the political will of the riparian states to co-operate with each other.

4. The concept of internationalization of a river system has evolved considerably after the period 1885-1919. It is now becoming a tool to be used in achieving optimum development of natural resources; in the joint construction of structures of common interest to several countries, which are often too big for a country to build on its own or which one country could not make optimum use of on the very nature of which determines that it should be used by several countries..

5. The Act of Berlin signed on 16 February 1885 established a sort of a free trade area throughout the vast territory including the river basin and all territories between the basin and the Indian Ocean from latitude 5° north at the mouth of Zambesi on the one hand and the territories between the river basin and the Atlantic Ocean, falling between latitude 2°30' south and the mouth of the Loge.

The Freedom of Trade which the 16 signatory States enjoyed was accompanied by freedom of navigation on all the water courses and lakes throughout this immense territory, for, Britain, Austria-Hungary, Belgium, Denmark, France, Germany, Italy, Netherlands, Portugal, Russia, Spain, Sweden, Norway, Turkey, United States of America (the latter never ratified the Act).

Furthermore, the neutrality of the territory is guaranteed even in the event of war between the contracting powers, and steps were taken to abolish slavery and the slave trade which was then flourshing in this part of the African continent.

An international commission for navigation was established (Article 17) to enforce the Convention with respect to navigation. Its powers are defined in Articles 19 and 20: development of waterways, establishment and application of navigation regulations, ensuring the safety and control of navigation, sovereignty over the waterways of the territories not yet under any colonial power.

6. The Brussels Act of 2 July 1890 was a treaty of co-operation for the abolition of slavery and slave trade in the same territory and maritime zone. The signatory powers were the same as those of the Berlin Act, plus Persia, the sultanate of Zanzibar and Ethiopia, Liberia and the Orange Free State which signed the Act in 1890, 1892 and 1896 respectively.

Finally, the Convention of St. Germain en Laye abrogated the preceding two conventions, except Article 1 of the Act of Berlin, which defined the territory of application. In this Convention:

(a) the territory of application was maintained;

(b) the freedom of [illegible] within this territory was confirmed;

(c) freedom of navigation and equal treatment was reaffirmed in relation to all rivers, streams, lakes, branches and outlets within the territory defined by the Berlin Act as well as the need for improvement of navigability of reaches on all structures such as roads, railways and canals.

8. Consequently, and with the exception of independent countries which had categorically denounced this convention the geographical delimitation of the waterways concerned include:

- all the great lakes from Lake Turkana to Lake Malawi;
- all the coastal rivers which discharge into the Indian Ocean from the river Shebelle in Somalia to the Zambezi-Shire in Mozambique, as well as the Upper Nile south of the fifth parallel and all the coastal rivers from the Loge to the Nianga on the Atlantic coast.

This includes lower Zambezi up to the confluence of river Shiré and Lake Malawi; the rest of the Zambezi basin is not included.

9. In conclusion, it can be said that it is necessary to institute a new international law for the basin of the Zaire river:

(a) to revoke commitments which bear no relevance to the present situation, such as:

- granting freedom of trade to the former colonial powers - this same freedom must be guaranteed among the African nations which have taken the latter's place as reflected in the undertaken fresh commitments within their respective communities (ZEP, ECCAS, ...);

- neutrality of the territory in the event of a war between any of the former colonial powers; this is no longer applicable;

(b) taking the necessary legal steps to renew the agreements relating to freedom of navigation, equal treatment, prior approval of projects, joint development of inter-State reaches, etc.;

(c) incorporating in the new law, new economic and technical fields and the new framework for intra-African co-operation as that the States within the basin will determine future development strategies in spirit of the "Agreements in principle adopted by Heads of State and Government in Monrovia and Lagos, bearing in mind the complex network of the co-operation arrangements which already exist between Central, Southern and East African States.

3.3 Organizations already in existence which are directly concerned with the development of the River and its tributaries

These are mostly regional organizations. To avoid interference of the proposed joint river basin authority in the operation of existing national, subregional and regional organizations its policy should be oriented towards seeking assistance from and giving assistance to the existing technical services at the national level and subregional levels.

The nine countries bordering the basin belong to various organizations for co-operation as shown in the following table:

	Angola	Burundi	Cameroon	CAR	Congo	Rwanda	Tanzania	Zambia
1. Continental Organizations								
OAU	.	.	.	.	.	.	.	.
ECA (UN)	.	.	.	.	.	.	.	.
2. Multilateral Subregional Organizations								
- PTA	.	.				.	.	
- ECCAS		.	.	.	.	.		
- CEPGL		.						
- UDEAC			.	.	.			

	Angola	Burundi	Cameroon	CAR	Congo	Rwanda	Tanzania	Zaire	Zambia
2. Multilateral									
Subregional									
Organizations									
- Organization of Front Line States	•						•		•
- Lake Chad Basin Commission			•						
- Niger Basin Authority			•						
- Kagera Basin Commission		•			•		•		
- Zambesi Basin Commission 1/						(•)	(•)		
- Nile Basin Commission 2/		(•)			(•)	•	(•)		
- Zaire-CAR-Congo Tripartite Commission 3/				(•)	(•)			(•)	
3. Bilateral									
Subregional									
Organizations									
- CAR-Congo Joint Commission				•	•				
- Angola-Zaire Joint Commission	•								

1/ The Republic of Zaire has still not ratified the agreement since 1978. The Commission therefore does not yet exist as a legal entity and is not operational.

2/ The establishment of a legal Zambezi Basin Organization is yet to be examined. The neighbouring states have however clearly manifested their desire to co-operate with each other, particularly in the area of inland water transport development.

3/ The Egypt-Sudan Technical Commission is operational. Initial steps have been taken towards establishing a Nile Basin Commission comprising all the neighbouring states (Burundi, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, Uganda, Zaire).

(a) Subregional organizations

It is quite evident that a river basin constitutes the most important concrete link between states which belong to two different subregions:

- Between ECCAS (Burundi, Cameroon, CAR, Congo, Rwanda, Zaire) and the PTA (Burundi, Rwanda, Tanzania, Zambia);
- Between subregional sub-groups and the subregions: UDEAC and CEPGL as compared to the PTA and ECCAS.

Two countries (Rwanda and Burundi) belong to two subregional groupings (PTA and ECCAS) at the same time whilst also belonging to the (CEPGL), a sub-grouping.

One country, Angola, has not yet joined either of the two subregions.

ECCAS was created recently and is not yet functioning. PTA has started operating but several countries are yet to join. However, the UDEAC and CEPGL sub-groups are functioning and have administrative, technical, economic and financial departments.

(b) Bilateral organizations

The bilateral organizations which we know to be functioning and which are associated with the river are:

- The Congo-CAR joint commission which, since 1970, has been very active on the river on the Brazzaville-Bangui-Ouango section and on the Sangha (inter-state reaches) and on the right bank tributaries in CAR and Congo (national reaches).

This organization comprises:

- A Council of Ministers, which meets whenever necessary;
- A Management Committee made up of Managers of the River Transport Companies in the two countries (ACCF and ATC);

- A jointly operated unit responsible for maintaining the buoyage system and carrying out studies and work aimed at improving waterways (SCEVN) on the basis of total revenue received from river tax levied on the tonnage of goods transported;
- A joint freight handling office which regulated the distribution of inter-State cargo between the two national river transport companies: 20 per cent for ATC (Congo) and 80 per cent for ACCF (CAR).

The "Service Commun d'Entretien des Voies navigables (SCEVN)" is also responsible for the maintenance of the buoyage system and work on national waterways which is paid for by each State.

The agreements also uphold the principle of mutual assistance on the waterways and provide for one company using the other's workshops or facilities subject to certain compensatory conditions.

The SCEVN has an efficient and competent staff and adequate equipment for rock clearing and dredging of sills. It overhauls the buoyage system every year before the lowest water periods when the level of water in the navigable passes drop considerably. Replacement of the buoys is accompanied by dredging of sills where necessary. The SCEVN is currently the only company which still has a team for undertaking hydrological studies and hydrographic surveys. It was actively involved in all the major development works carried out, namely:

(1) Dredging of the Zinga sill on the Ubangui which previously made it necessary to break bulk and switch onto rail transport downstream and upstream from the sill; (This took several years of work financed by FAC)

(2) Improvement of the confluence of the Lobaye and the Oubangui which was often silted up. The improvement works were financed by FAC and carried out partly by SCEVN and partly by contractors;

(3) The current World Bank project relating to the construction of castor dams on the lower Sangha.

The SCEVN is now looking for funds to expand its facilities for rock clearing and dredging and to develop and equip a river base at Bangui. This CAR/Congo project will cost $2,440 million of which $1,980 million is being sought from the EDF.

Joint Angola-Zaire Commission is the body for co-operation between the two countries on the maritime reach. We were unable to collect information on the structure and activities of this Commission. It is hoped that Zaire and Angola would provide all the relevant information on its structure and activities at the proposed meeting.

Co-operation on lakes Tanganyika and Kivu. These lakes serve all their riparian states. The River Ruzizi from which Lake Kivu flows into Lake Tanganyika is not navigable. Hyydro-electric plants for supplying Rwanda, Burundi and Zaire have been built on the river. It is planned to use the lower section of the river for irrigation purposes. There is considerable navigation on Lake Tanganyika. Since there exists good condition for navigability, there remains only some co-operative effort among the riparian states for improving the navigability of the lake, which may involve, regulation of the lake level. The mechanism for promotion of co-operation is given elsewhere in another chapter.

Co-operation could also be developed in areas such as fishing, irrigation and river-rail links (ferry boats). Since the mission could not visit Rwanda, Burundi and Tanzania, it would be desirable if these countries and/or the CEPGL would inform the planned meeting of the status of their activities in the basin.

(c) Important national establishments

As 62 per cent of the basin is in the Republic of Zaire, where the River is navigable over a distance of 15,000 km, the national establishments operating on the river are specially important for the whole of the basin. The most important of these is the "Regie des Voies Fluviales" (RVF) which is responsible for the maintenance of the waterway over a distance of 11,559 km as well its buoyage including and improvement of its navigability. The "Regie des Voie Maritime" (RVM) is responsible for the dredging of the meandering zone of the river downstream from Matadi as well as buoyage and piloting in the maritime reach.

As a result of the economic difficulties faced by the country, the RVF concentrated its efforts on the "Voie Nationale" and limited its activities on secondary reaches or on those that Zaire had little traffic (particularly on the Ubangui).

The Government of Zaire and the World Bank recently assessed the possiblities for improving the efficiency of the RVF and for improving buoyage and maintenance of the waterways. It would be desirable if the RVF would present at the proposed meeting a report on its structure, its facilities, its work programme as well as a synthesis of the planned reinforcement of its facilities, in co-operation with the World Bank, Belgium and Germany (see World Bank/UNDP report). The RVM is responsible for the buoyage, piloting and improvement of the waterway from Matadi to the Ocean (see ECA report - Rajohnson).

Conclusion

Multilateral establishments

The setting up of all these co-operation bodies amounts to contractual commitments on the part of the riparian states, which in no way contravene their collective commitments with respect to the River, either in terms of undertaking collective improvement works or harmonizing their national activities in the basin. Reading the ECCAS and PTA/ZEP treaties attached as annex 7.16 will provide enough confirmation of this.

On the contrary, decisions on co-operation and commitments already made by states within the context of existing subregional organizations call for the exercise of the same co-operative spirit at the inter-subregional level within the basin of the river. In other words, co-operation with respect to the river, its tributaries, sub-tributaries and lakes will open the way for subregional economic relations, which have hitherto has been limited to bilateral agreements, particularly between countries of the same subregion sharing a common border. These agreements most often relate to specific reaches or issues.

Increased co-operation will in no way hinder the development of national or bilateral activities. On the contrary, but will on the contrary provide the following benefits:

(1) Revision and Africanization of the law defining the international status of the river will give intra-African co-operation a more appropriate legal basis in technical and economic terms, a more solid and coherent basis at the legal and political levels and better guarantees and justifications at the financial level;

(2) The common Organization which the states should establish to enforce the international convention on the river will be structured with a view to deal with issues of co-operation defined by the member States. Thus, existing structures and activities relating to the basin will either be maintained in their existing forms or incorporated in the Organization (as subdivisions of the Organization) and be open to all the countries concerned;

(3) The multilateral organizations mentioned earlier (ECCAS' ZEP) will help promote positive co-operation in the basin;

3.1 Co-operation in the basin can become the first major step towards effective inter-subregional co-operation and benefit from political decisions of co-operation and integration already taken by the countries in the various subregions:

(a) Each country will harmonize, in a definitive way, its commitments, priorities and interests at the subregional (ECCAS, PTA) and inter-subregional levels (basin of the River and others); this is fundamental to efficiency and cohesion at the initial stage;

(b) Each subregion will, out of solidarity or interest, support inter-subregional programmes for the development of the basin, in proportion to the size and resources of the part of the basin within its territory and the prospects for inter-subregional trade. This means that each joint programme should include a substantial number of the components of the action programme of the basin; this will help considerably in the harmonization of inter-subregional development plans;

3.2 However small they may be, states cannot neglect the resources in their territories, or fail to recognize the fact that some natural resources are trans-national and as such can only be developed adequately if the countries sharing the same resource co-operate. Similarly, the states should pool together to develop the resources which are profitable only when developed jointly or which can only be developed through the efforts of several states. It is important, on the establishment of subregional economic groupings, to think about relationships between the various subregions and to propose realistic ways of organizing these relationships. It is in this respect that it is especially important now for the riparian states to adopt and ratify the International Convention on the River and to develop the inter-subregional co-operation called for by this new Convention.

3.3 The current subregional boundaries are quite artificial considering the arbitrary nature of colonial occupations and decisions. The best example of this is that some countries do not know specifically which subregion they should join while others claim objectively that they belong to two different subregions.

It is easily understood, therefore, that the geographical boundaries of the economic subregional groupings can change. Countries can be excluded from any subregion, others can leave one subregion and join one or two subregions, or change subregions, in accordance with their interests or the political and economic developments in the continent;

3.4 On the contrary, the geography of the basin of the River does not change,

neither do its physical features. The benefits that the resources of the basin afford the riparian states are permanent; a river is a permanent natural link;

3.5 By way of conclusion:

(a) None of the existing subregional organizations can absorb basin of the River;

(b) All the existing subregional organizations are directly concerned, to some degree, with the development of the River, its tributaries and lakes;

(c) Adopting the Convention on the River will be the first practical move towards subregional co-operation. None of the present commitments made by the riparian states at the subregional level will pose any obstacle to the co-ordination of activities concerning the basin of the River on an inter-subregional level.

Since the existing subregional institutions are new, it is proposed that co-ordination between the Organization of the basin and the PTA/ZEP, ECCAS, UDEAC and CEPGL at the governmental level be initially entrusted to the riparian states. Technical co-ordination could be in two forms:

- The subregional institutions could be invited to the ministerial sessions of the Organization of the basin as observers and in an advisory capacity, and vice versa;

- The officials of the subregional institutions and those of the Organization of the basin would be mandated to co-ordinate their activities relating to the basin.

This practical method has the advantage of being operational and economic. Extracts from the ECCAS and ZEP/PTA treaties relating most directly to the basin are attached as annex 7.16 to this report.

Suggestions on the relationship between the Organization of the basin and the bilateral and national institutions are proposed in chapter 5.

3.4 Present state of the development of the river and its tributaries

3.4.1 Navigation and ports: The navigable waterways of the river basin comprise:

- The maritime reach which is navigable over a distance of 148 km from the ocean to Matadi at draughts of between 23' to 26'. The lower section of this reach marks the boundary between Angola and Zaire.

  In 1978, Angola and Zaire established a joint commission for the development of the reach. The central part of this reach where the river deposits alluvium as it flows down from the rocky gorges marking the end of the cataracts zone upstream has to be dredged constantly to provide access to the reach for boats from the sea;

- The middle reach is navigable over a distance of 1,740 km from Brazzaville-Kinshasa to Kisangani at draughts of between 2 m and 1.30 m.;

- The upper reach or Lualaba stretches from Kindu to Ubundu over a distance of 320 km and from Kongolo to Bukama a distance of 620 km; the draught is between 1.30 m and 1 m. Railways are used to correct the unnavigable section between Kisangani and Ubundu and between Kindu and Kongolo;

- Navigable tributaries

  (a) On the left bank, the Kwa-Kassai (703 km) and its tributaries (1,896 km), the N'Fimi and its tributaries (1,100 km), the Lomani (390 km) and the Lulonga and its tributaries (1,608 km), the Buki-Tshuapa and its tributaries (2,586 km). The RVF is responsible for maintenance and buoyage of all these waterways;

  (b) On the right bank, the Ubangui (1,010 km), the Sangha (977 km), the Lobaye (90 km), the Ibanga (210 km), the Motaba (190 km), the Alima (500 km), the N'Keni (280 km) and the Lefini (186 km).

The People's Republic of the Congo and the Central African Republic established a joint co-operation commission for the Congo-Ubangui with a joint waterway management service (SCEVN) and a joint freight handling office (see chapter 3.3).

- Lake navigation: Lake Tanganyika is navigable over a distance of 740 km. It is then connected by rail to the navigable reach of the Upper Congo (Lualaba) at Kalabo northwards to Kalemie (345 km) and southwards to Kalemie (135 km). The Lukuga which connects Lake Tanganyika to the navigable network of the Lualaba (upper reach) is navigable for a distance of only 8 km from its mouth Lake Kivu is a 280 km long isolated waterway.

The main waterway network of the basin therefore comprises:

1. <u>The maritime reach</u>

2. <u>The River</u>

- Brazza/Kinshasa to the confluence of the Ubanqui	610 km	1 m 80 to 2 m
- Confluence of the Ubanqui to Kisangani	1 124 km	1 m 30 to 2 m
- (Kisangani–Ubundu railway)	.m	
- Ubundu–Kindu	320 km	1 m to 1.50 m
- (Kindu–Kongolo railway)	p.m.	
- Kolongo–Bukama	630 km.	(561 km 1 m to 1.80 m (8 km 1 m to 1.20 m
- Luapula (Kasenga) – Lake Mweru (Pweto)	275 km	1 m to 1.50 m

3. <u>Navigable tributaries</u>

(a) <u>Right bank</u>

- The Lefini	185 km	3 m to 5 m
- The N'Keni (Gamboma) 280 km	280 km	2 m
- The Alima (Okoyo)	500 km	over 2m less than 3 m
- The Motaba (Bangui Motaba)	190 km	2 m
- The Ibenga (Moumpoutou)	210 km	3 m (except at the confluence during low water periods
- The Lobaye	90 km	1 m
- The Sangha (Ouesso)[1/]	500 km	(0 m 8 ... 12 months (0 m 9 ... 11.5 months (1 m 30... 9 months (May to end (January (1 m 50 ... 8 months (beginning of (May beg. of (January
- The Upper Sangha (Salo)	285 km	(0.9 m ... 8 months mi (May to mid (January (1.20 m to 1.50 m ... (7 months January and (July to December (1 m 50 to 1 m 8 ... (5 months August to (December

- The N'Goro : (Mouloundou)	192 km	(0.80 m ... 12 months (Mouloundo (0.80 m ... 9 months (Fort Souflay) May-June Dept. to Dec.
- The Ubangui (Bangui)	610 km	0.90 m to 1.3 m
- The Upper Ubangui (Bangui-Ouango)	560 km	1.3 m to 3.5 months/year
- The Ibinbini (Yambinga-Aketi)	255 km	0.8 m to 1 m
- The Mongala (Mobeka-Businga)	329 km	0.8 m to 1 m
- The Aruwini (Bosoko-Yambua)	120 km	0.80 m to 1.20 m
- The Giri (Mouth-Bomana - 138 km)	....	(1 m to 1.50 m
(Bomara-Monianga - 159 km) -	297 km	(0.80 m to 1.20 m
- Lake Tanganyika	740 km	over 2.00 m
- Lake Kivu	280 km	over 1.50 m
- The Lukuga	8 km	0.80 m to 1.20 m
Sub-total:	5 631 km	

(b) Right bank

- The Kwa	98 km	2 m
- The Kassai (Ilebo)	605 km	1.50 m to 2 m
- The tributaries of the Kwa-Kassai	2,741 km	of which 1,176 km has a draught of 1.50 m and 1,563 km at 1.20 m
- The Ikelemba (M'Bandaka-Balangala)	316 km	0.80 m to 1.20 m
- The Ruki and its tributaries	2 586 km	0.80 m to 1.30 m
- The Lulonga and its tributaries	1 608 km	0.80 m to 1.30 m
- The Lomani	390 km	0.80 m to 1.20 m
Sub-total	8 344 km	
Grand total	17 082 km	

- Navigability calculated from ATC/SCEVN data and from the 1974 hydrograph (deficit year)

- See hydrograph in chapter 4.2.

In addition to these 17,028 km, there are other waterways which are navigable at certain times of the year such as the Likouala-Nossaka (455 km 7 months in the year at a draught of 1.60 m); the Likouala-aux-Herbes (700 km 8 months the Epéna Canal (40 km at certain intervals as well as the upper basins of tributaries which are not navigable on a permanent basis and for which we have no data.

Some navigable stretches of water may have been excluded from this list because they are hardly being used or not yet used by the modern national modes of transport.

Others were also excluded although they are used by ordinary pinasses and canoes for local transport. Those reaches used for floating logs were not included.

A map showing navigable waterways is to be found in annex 7.6-4.

The development of navigable waterways in the past consisted mainly of:

- improving reaches which were naturally navigable (buoying: removal of snags);
- clearing rocks from sills and dredging;
- equipment of river ports according to needs.

It was therefore mainly a question of making use of stretches of water where navigability was naturally good. Only small structures for improvement of the natural channel were built as well as railways to link the navigable stretches.

The main ports of the waterway network are at the following areas:

(a) On the maritime reach - Matadi and Boma;

(b) At the W terminus of the Brazzaville and Kinshasa, with a river-rail link on each bank.

(c) On the left bank of the river - (Kinshasa), Mbandaka, Lisala, Bumba, Basoko, Kisangani, Ubundu, Kindu, Kolongo, Bukama.

(d) On the right bank of the river - Ngabé, Kounda Mongaka, Liranga.

(e) On the left bank tributaries - Bandundu, Mangai, Ilebo, Luebo on the Kassai, Kikwit on the Kwilu, Boendo on the Tshuapa, Akula and Businga on the Mongala.

(f) On the right bank tributaries - Gambona on the Nkéni, Okoyo on the Alima, Laboko and Etoumbi on the Likouala, Pikounda, Ouesso on the Sanga, Salo and Nola on the Upper Sanga and Moulondou, Fort Rousset on the N'Goko; Mobenzélé, Impfondo, Dongou, Bétou, Mongoumba, Zinga, Bangui, Kouango, Mobaye and Ouango on the Oubangui, Epóna sur Likouala aux herbes, Bangui-Motaba on the Motaba, Moumpoutou and Enyellé on the Ibenga, M'Bata and Lokosaga on the Lobaye, Kalémié, Kalundu and Moba, M'Pulungu, Kigoma, Bujumbura, Uvira on Lake Tanganyika.

The most developed and best equipped of these are:

Brazzaville, Kinshasa, Bangui, Kisangani, followed by Ilebo, M'Bandaka on the River and its tributaries and Kigoma, Uvira, Bujumbura and Kalemié on Lake Tanganyika.

River traffic

(1) The Ubangui- Sangha river system

This network serves the People's Republic of Congo, the Central African Republic, South East Cameroon and Chad.

It also includes transport on the Lobaye which involves mainly timber export and the traffic on the Upper Ubangui (hydrocarbons upstream; cotton, tobacco coffee downstream). The importation of cement from Zaire to Congo and the Central African Republic has increased over the past few years.

Table 1 shows the development of river traffic between 1972 and 1982 and gives a country by country breakdown.

The breakdown of traffic flows on each waterway can be found in Table 2.

The rate of increase in traffic in this network is about 2 per cent per annum.

There is a permanent imbalance between the number of tonnes imported and exported since the export of timber accounts for 62 per cent of the total traffic.

A conservative estimate of the increase to be expected in river traffic in the whole of this sub-basin has been drawn up by the SCEVN, but it is highly probable that such figures will be exceeded if the heavy investments made by the Republic of Congo in the forestry and agro-industrial sectors begin to yield results (see Table 3).

(2) Kwa-Kassai river system, Upper river and other tributaries

River traffic declines steadly from 1974 to 1980 but since 1980 sharp increases have been reported as a result of rehabilitation programmes undertaken by the Office Nationale des Transports du Zaire" (World Bank, KFW, BADEA and Zaire joint project totalling $84 million), the liberalization of river transport and increased technical assistance in the field of management.

The total volume of river traffic controlled by the state through ONATRA has developed as follows (in 1000 of tons).

	1974	1975	1976	1977	1978	1979	1980
Upstream traffic	459	468	420	388	379	313	328
Downstream							
Copper	245	258	197	219	200	158	207
Others	426	365	349	295	292	291	262
Domestic traffic	70	55	59	44	54	26	
Total	1 200	1 146	1 025	946	925	788	797

River traffic forecasts for 1980 and 1990 predict that the volume of traffic will double during that period (737,000 to 1,490,000 t), which is not considered to be excessiv if transport authorities are able to develop their handling capacity. The development potential of timber production alone could cover such an increase, even without exceeding the limits set to allow for natural regeneration of these resources.

Current figures on parastatal fleets operating on rivers and lakes 1/

Flag	Self propelled barges		Pushers	Tugboats	Barges	
Zaire						
Congo						
RCA						
Angola						
Zambia						
Tanzania						
Rwanda						
Burundi						
Cameroun						

1/ Data to be requested from States during the meeting. Data gathered during the mission is to be found in the country reports in the annexes.

Part of the fleet is old and very expensive to run. It is now being modernized with heavy funding from the World Bank, EEC, Belgium, France and Federal Republic of Germany.

The liberalization of river transport in Zaire (by allowing private carriers to operate) have given a boost to activity in this sector.

River transport which opens up to the sea by linking the neighbouring states has played and continues to play a very important role in the economic activity in the basin.

To our knowledge, the main development works carried out up-to-date are:

- excavation of the Zinga sill in the Ubangui at the end of 1962;
- natural channel improvement of the confluence of the Ubangui /Lobaye which used to silt up during low water periods; this helped increase the draught to 1.10 m at low water without dredging;
- the current pilot project relating to the construction of "castor" dams on the lower Sangha;
- several other small-scale development works involving clearing of rocks, dredging, hydrographic charting, improvement and correction of the buoyage system in the CAR, Congo and Cameroon during the past 50 years.;
- Apart from the following, development works carried out in the past in Zaire are kunknown to us:

  (a) the construction of railways to bypass the reaches;
  (b) calibration of the Lukuga (1937-1941);
  (c) the systematic dredging of sills (RVF), the fluvio-maritime pass (RVM) and the annual renovation of the buoyage system;
  (d) the gradual construction and equipment of ports being carried out at the general level (of World Bank project on Matadi, Kinshasa and Ilebo).

3.4.2 Hydroelectric power

The river basin has enormous hydroelectric power potential and its exploitation started several decades ago, mainly to satisfy the demands of the mining industry. To our knowledge, the hydroelectric power sites were not fully identified. The analysis here will be limited to defining the boundaries of the basin and current activities for exploitation of resources. The existing hydroelectric power sites and undeveloped sites known to us have been indicated on a map of this basin. This inventory does not give the full picture and should be completed.

(a) Hydroelectric power potential

The total hydroelectric power potential of the river basin is about 168 million HP or 123.6 million kw. Assuming an operating capacity of 6,000/year, this can provide 741.600 billion kwh/year.

The hydroelectric power potential of the river alone is 114 million HP or 84 million kw (84,000 MW). Most of the sites for the production of this energy are located on the Matadi-Kinshasa reach where, the river drops 300 metres over a distance of 350 km, and passes through 32 waterfalls; this represents a total power potential of 93,000 megawatts in this part of the basin alone.

Considering that 60 per cent of the potential energy can be exploited, it is estimated that it comprises approximately 56 million kw (56,000 MW) or 45 per cent or 66 per cent of the total capacity of the basin and of the the river respectively. In this area of exceptionally high concentration of energy sources, one site alone, that of Inga which is currently being developed, can produce more than 30,000 MW of power.

(b) Existing hydroelectric power sites

Waterway	Name of structure	Plant capacity (kW)	Guaranteed power (kW)	Date of putting into operation	Remarks
Lualaba	Le marinel	248 400	186 300	1956	
Lualaba	Delcomune	108 000	81 100	1952	
Lufira	Francqui	75 700	56 160		
Lufira	Beni (Bia)	42 120	28 000		
Luvua	Piana Mwanga I et II	28 900	19 940		
Lualaba	Kabalo				
Lualaba	Kougolo				
Kilombwé	Kimbi	17 200	8 600		Tributary of a tributary Luama-Lualaba
Tshopo	Tshopo	12 400	6 200		Tributary of a tributary Luama-Lualaba
Ruzizi	Mururu	28 000			
Tributary Lualaba	Kempene				Right bank tributary of the Lualaba
Lualaba	Kindu				
Elila	Namoya				
Elila (Lutshurukuru)	Kalima I (Kalima)	4 600			Right bank tributary of the Lualaba
	Kalima II	2 300			
	Kollo				
Utindi	Bukava	14 000			
Utindi	Luliuga				
	Moga				
Lowa	Bolia	2 000			
Malaba	Ponthierville				
Lualaba	Shopo	15 000			Close to Kisangani
	Kamina				Left bank tributary upper Lualaba
	Mitwaba				" " "
Lubilash	Melignon	9 900			Tributary of the Kassaï
	Young	7 400			
	Tshala	1 200			
Lubembe	Tchipaka				
Aruwimi (Shari)	Soleniama I et II	1 840			Tributary of the Kassaï right bank tributary of the Congo, near Lake Albert

Waterway	Name of structure	Plant capacity (kW)	Guaranteed power (kW)	Date of putting into operation	Remarks
Aruwini	Budafiia				
Bomekandi (Zoro)	UZcro I	800			Tributary of a tributary of the Oubangui through the Uele
M'Bali	Watoon Boali	18 800			Tributary of the Uubangui near Bangui
Djoué	Djoué	15 000		1953	Tributary of the River close to Brazzaville - Capacity 30 MW
Lefini		70 000			Tributary of the River upstream from Brazzaville works underway
	Moerbeke	12 000			Tributary of the Congo near Kinshasa
Inkisi	Zongo	75 000	62 000		" " ".
Inkisi	Courtoy	12 000	10 000		
Congo	Inga	320 000		1973	2nd phae: 3,700 MW Final phase: 30,000 MW
Congo	M'Pozo	2 000			
Kassaï	Janot	1 600	800		
Lukula	Chishimba Falls				Tributary of the Chambechi near Kassama
Mansa	Musonda Falls				Right bank tributary of the Lualapa Mansa
Chambechi	Lunsoa				

There are several small plants in Zaire which could not be located, including the following:

Moualaert (7,300 kW), Kalule (3,700 kW), Dikolongo (2,000 kW), Ambé (2,400 kW), Lubiadja (416 kW), Magembé (2,400 kW), la Sweery (1,600 kW), Zizi (1,500 kW), Lubilu (736 kW), Landehem (350 kW), M'Bale (288 kW), Lutunguru (224 kW), Mokotos (224 kW), Nyabiodi (135 kW).

As can be seen there are several hydroelectric power plants of varying capacities ranging from mico-plants to the giant Inga plant which is being developed phase by phase.

Construction of hydroelectric power plants started in 1930; the first ones were built by mining companies in the eastern and south-eastern parts of basin to supply their own needs. Due to the bowl-shaped nature of the land, hydroelectric power potentia of the periphery of thebasin is very high. The central part of the basin has lower hydroelectric power potential; power stations have therefore been bult along the periphery, particularly in areas where the discovery of mineral deposits call for huge sources of energy for their exploitation.

(c) The sites which can be developed have not all been identified. Those which have been identified are as follows:

Country	Waterway	Site	Height (m)	Discharge (m^3/s)	Power (MW)	Remarks
Zaire - Bas Zaïre	The River	Inga II	56.2	2 200	1 400	
		Inga III	60.5	5 500	3 000	
		Grand Inga	150	38 000	39 000	
	Inkisi	Zongo II				
	Luasi	Gombe-Matadi	10	2.2	0.17	
					220.00	
Shaba	River Zaïre	Bussanga			20.00	
	Kiymbi	Bendera				
	(Upstream lake)	Mambalima			2.25	
	Luba	Kanlama-Luba			0.75	
	Mwanzale-Lut	Mwanzale-Lut				

Country	Waterway	Site	Height (m)	Discharge (m^3/s)	Power (MW)	Remarks
Kivu	Ruzizi	Panzi		66.00	36.00	
	Ruzizi	Kitimba			33.60	
	Ruzizi	Kamanyola			240.00	
	Luberizi	Luberizi	28.00	1.50	0.33	
	Mutambala	Maltchia	6.50	11.20	0.58	
		Kiringye			0.20	
	Kiliba	Kiliba	545.00	2.00	15.00	
	Luhulu	Mugomba	140.00	16.00	18.50	
	Lubero	Lubero	45.00	2.50	1.70	
	Musosa	Itav-Butembo	7.60	1.50	0.09	
	Semliki	Semliki	20.00	23.00	28.00	
	Butawo	Ruwenzori I	180.00	3.10	6.00	
	Lusilube	Ruwenzori II	180.00	2.50	6.00	
	Lubulu	Kisalala	175.00	3.10	5.00	
	Musosa	Ivugha	60.00		2.00	
	Rutshuru	Rutshuru	23.00	14.00	2.57	
	Fuku-Fuku	Rutshuru F	25.00	1.40	0.28	
	Ulindi	Mwenga	30.00	27.50	6.60	
	Tayla Sud	Muhuma	280.00	8.10	25.00	
	Mweso	Ngingwe	15.00	18.00	2.16	
	Mweso	Binza	25.00	12.00	2.56	
	Nyakisuma	Nyakisuma	172.00	0.50	0.68	
	Osso	Osso	10.00	17.20	1.37	
	Elila	Kindu				
Upper-Zaire	Tshopo	Tshopo II			13.60	
	River Zaire	Pt. Wagenia			37.60	
	River Zaire	Wagenia)				
	River Zaire	Wanie Rukula)			2.400.00	
	River Zaire	Mutshangani)				
	Kibali	Dungu			1.50	
	Tse	Fataki			0.40	
	Lubilu	Lubilu		20.00		
	Lindi	Bengamisa	12.00	500.00	48.00	
Eastern Kassaï	Lubilashi	Tshala II			11.70	
	Lubilashi	Young II				
	Mbujimayi	Katabaye	13.00	126.00	13.91	
	Lulu	Kafumbu	10.05	92.013	7.39	
	Katsha	Katsha	17.14	0.56	0.07	
	Muovo	Muovo	20.00	2.92	0.46	

Country	Waterway	Site	Height (m)	Discharge (m^3/s)	Power (MW)	Remarks
Western Kassaï	Lulua	Bombo	7.00	250.00	12.00	
	Lulua	Katende I		350.00	17.00	
	Lulua	Katende II		350.00	30.00	
	Tshibashi	Tshibashi	4.00	5.00	0.16	
	Miao	Tshibwayi	4.26	66.50	2.26	
	Kaluebo	Kaluebo				
	Luekeshii	Luekeshi				
Equator	Ubangui	Mobaye	5.00		26.40	Development
Bandundu	Wamba	Kapanga	2.00	300.00	4.80	works under-
CAR	Mamberé	Zone de Carnot (H=10m)			15,000.	way, stopped
	Nana	36 km from Carnot			22 000	temporary
	Pama	Boali area	32	40	10 000 17 500	Dam 35m high 400 million c cu. m
	Pama	Boali area	70		22 000 to 37 000	
	M'Bi	30 km from Bossembélé	36	31 to 53	12 500 to 21 000	Possible reservoir 1 billion cu.m
	M'Bi	Boali area	75	17 to 29	17 500	Reservoir of 15 million cu. m
	M'Poko	Bossele-Bali	30	45	11 000	
	M'Poko	Damara	20	45	7 500	
	Lobaye	M'Baiki	10 to 15	270	21 000 to 32 000	
	Kotto	Kembé	22 to 24	225	40 000	
	Oubangui	Mobayé	5.5		26 400	Project of the Rep. of Zaire
	Oubangui	Bangui	9		40 000 to 60 000	Dam with a lock

Country	Waterway	Site	Height (m)	Discharge (m^3/s)	Power (MW)	Remarks
	M'Bi	Hydroelectric power plant south of the water fall upstream of Mambilima or Johnston Fall			21 000 to 37 000	
Zambie	Luapula					
	Upper Chambechi	Kalambo Falls			Border	Border with Zaire close to M'Bala
	Luapala					Possible site in a deep narrow gorge
Congo and Zaire	The River	Cataracts Zone				Several sites common to both countries
	Lefini	Imboulou			100 000	Construction of plan water under way
	Kandéko	Kandéko			2	Construction in progress 30 km from Ouasso
	Triburary of the Djoua	Assoumoundélé			1	Plant being constructed in the Ogoué basin but will supply Sembé and Souanké towns in the basin
	Upper Likouala	Adinga			4	Development near Ntombi in stages of 1MW at a time

The survey of hydroelectric power sites in the basin should continue. It should take into account, in a very specific way, the effects upstream and downstream of the structures so as to maximize the possibilities of improving the water level for river transport and to utilize regulatory effects downstream as profitably as possible for irrigation, navigation and energy production.

In the same vein, the survey and preliminary study of sites can help the governments of the riparian states to better assess investment possibilities and priorities, in relation to other existing resources.

Finally, such survey constitutes one of the fundamental elements which would enable the Organization of the basin to define joint development programmes and in the long term to draw up a master plan for general and co-ordinated development of the basin, including implementation of projects.

The network of power transmission lines is given in the country reports. The existing interconnections are:

(1) Zaire-Congo between Brazzaville and Kinshasa

(2) Zambia - Zaire between the two copperbelts via Sakania

(3) Zaire - Rwanda from the Ruzizi plant to Kigali

(4) Zaire - Burundi from the Ruzizi plant to Bujumbura and from Bujumbura to Uvira

The central and northern parts of the basin have inadequate hydroelectric power facilities in spite of the excellent potential; this is a big obstacle to economic development and imposses high fuel costs on the countries.

The recent Inga project and the installation of the Inga - Shaba line have created extremely favourable conditions for economic development and co-operation for all the regions west and south of the basin.

3.4.3 Irrigation

In spite of the vast land and water resources in the basin, there is very little irrigation development. Its large scale development is constrained by the heavy rainfall in the region. Further, the need to develop irrigated farming was not strongly felt because of the excellent potential for rainfed agriculture. Paddy rice could be grown in large plantations in the extensive flood zones in the central part of the depression at little cost.

The mission was unable to collect data on areas presently under irrigation.

In Zambia, irrigation is practised on a small scale in the basin, mainly in the flooded areas of lakes Mweru, Mweru-Wa-N'Tipa, Bangwelu and Luapula.

Another area where large-scale irrigation is practised is in the valley of the Ruzizi.

The present climatic change towards an overall reduction in rainfall in the subtropical areas north and south of the basin and the problem of food shortage affecting all the states, are factors pressing for the development of irrigation in the basin as a matter of priority. The future Organization should take stock of areas presently under irrigation, the possibilities and the most suitable irrigation techniques that could be easily adapted. It should also draw up an extensive regional (multinational) project for the riparian states; establish areas of co-operation among them, seek the co-operation of African countries which have practical experience in the modernization of traditional agriculture (animal draught) and irrigation, and strive to implement specific projects for the development of irrigated agriculture which can serve as a model for the exploitation of the resources of the basin.

3.4.4 Opening up of the basin

The river basin is landlocked and has the following features:

- A single narrow corridor, approximately 150 km wide and 400 km long links the Atlantic Ocean to the West: the basin is 98 per cent continental;

- River navigation in the basin is not continuous up to the ocean. A 350 km navigable reach separates the navigable waterways of the basin. Access is the basin has been provided mainly by meter gauge railways.

Three East-West railways have been constructed towards the west, namely:

- the 360 km Matadi-Kishasa railway between the navigable maritime reach and the navigable inland reach;

- the 510 km Pointe Noire-Brazzaville railway which links the same two reaches mentioned above;

-- the 510 km Pointe Noire-Brazzaville railway which links the same two reaches mentioned above;

- the 1,870 km Lobito-Tenke railway which opens up the south of the basin.

Towards the East

- the 1,253 km Dar es Salaam-Kigoma railway which links Lake Tanganyika to the Indian Ocean;

- 2,082 km M'Poshia-Dar es Salaam railway, 522 km of which is in the basin, links the south-eastern parts of the basin to the Indian Ocean.

In the South and South-East, the Tenke-Lusaka railway links up the Zairian network to the Zambia, Zimbabwe, Mozambique, Botswana and South African networks through its branches to the ports of Beira, Maputo, Durban and East London.

The construction for the opening up of routes consisting of a combination of railways and natural waterways was undertaken mainly to serve the Shaba and north Zambian provinces which have rich mineral resources.

The basin is served by the waterways described in chapter 3.4.1 and by railways which go round the unnavigable reaches including the following:

- Kisangani - Ubundu
- Kindu - Kabalo
- Kamina - Kabalo - Kaleme

- Ilebo - Kamina towards the South of the Basin (978 km);
- Bumba - Mungbere towards the North of the Basin (868 km), Komba - Boualo (121 km) and Andoma - Tuhule (32 km);
- Sakania - Tenke - Kamuia (858 km) towards the South.

In Zaire these railways are 1,067 mm wide and 3,100 km long with rails weighing between 29 to 40 kg per metre; on the Ubundu Kisangani section the lines are 1,000 mm wide with 24 kg/metre, and 600 mm wide with 18 kg per meter on the northern network from Bumba onwards. Sections of the railway in the south (Lubumbashi-Kamina and Tenke-Mutshatsha) are electrified.

The road network in the basin is not developed, and is used mainly to open up local areas, except ir the south of the basin where the bitumen-surfaced Zambia - Tanzania highway goes through the south-eastern border of the basin. In the west of the basin the bitumen-surfaced Matadi - Kinshasa - Kitwit road (on the right border) and the Brazzaville-Ouesso road (on the left border) play an important role in domestic transport. The CAR-Cameroon highway and the Bangui-Bambari road in the north of the basin are also major opening up routes.

The major road projects are reviewed in chapter 3.5.

The main characteristic of this network openings are as follows:

- long delays in forwarding;
- frequent breaking of bulk;
- high operating and maintenance costs of the actual transport capacity which is small compared to the exploitable resources;
- the major part of the fuel consumed by the transport facilities is imported and thus expensive.

The main constraint to the development, of this sub-continental basin with vast resources is the existing transport system.

Enormous benefits would be derived if the riparian states would co-operate to further open up the basin.

According to the data available to us, the main import and export traffic flow on the various roads is as follows:

	Import	Export	Total
- Matadi-Kinshasa	417 000 T	886 000 T	1 303 000 T
- Kinshasa - The River	283 000 T	527 000 T	810 000 T
- Pointe Noire-Brazza - The River	88 500 T	432 500 T	521 000 T
- Kigoma-Dar es Salaam	n.d.	42 000 T	n.d.
- Diolo-Lobito 1/	0	0	0
- Tenko-Lusaka-Indian Ocean	n.d.	227 000 T	n.d.

1/ No traffic since 1975.

Table No. 3

River traffic estimates from 1982 to 1985 on the Congo-Ubangui-Sangha

Type of cargo	1982	1983	1984	1986	1988	1990	1992	1994	1995
General cargo	40400	54900	44550	54900	60800	72360	72750	79750	83800
Hycrocarbons (Brazzaville)	19273	25000	38000	[illegible]000	96000	98000	100000	105000	110000
Hydrocarbons (Kinshasa)	55595	60000	50000	-	-	-	-	-	-
Fertilizer	849	1000	1000	2000	3000	3000	5000	5000	5200
Cement CAR	15437	16000	15000	-	-	-	-	-	-
	131554	56900	148550	146900	159800	173300	177750	189750	199000
Export									
General cargo	49905	67600	54950	68100	74700	88700	89750	98050	103200
Cement	99025	100000	100000	100000	-	-	-	-	-
Sawn timber	48101	49500	66000	70000	90000	120000	140000	160000	168000
Undressed timber	56558	59000	74000	80000	90000	100000	110000	120000	126000
Rafts	206689	213500	250000	340000	431000	5290000	599999	725000	760000
Total	460378	489600	544950	658100	685700	837700	929750	1103050	1149200
Grand total	591932	646500	693500	805000	845500	1011000	1107500	1292800	1396200

(Source SCEVN)

3.5 Current development projects

3.5.1 Navigation and ports

(a) Development works

Navigation: The major development works are as follows:

- In Zaire: improvement of the lighting facilities on the Voie Nationale at least up to Ilebo, by installing markers for night navigation, extension of the Matadi, Kinshasa and Ilebo ports and expansion of their facilities to increase productivity, to cut down and to end transport time, to allow for partial containerization and increase in timber traffic and expand rail and traction equipment.

Two projects, one being undertaken by ONATRA and the other by the RVF, are under way with the World Bank as lead agency. New and modern shipping fleet are currently being put into operation, including 1,000 tonnes barges.

The facilities of the RVM for maintaining the maritime reach are being expanded to overcome the problems of studies and dredging. Finally, a free port is to be constructed at Banana with a power line to Inga, a road and rail link to Matadi and a bridge over the River.

- In the Congo, the Central African Republic and Cameroon several projects relating to expansion and [illegible] ports have either been completed or are under way (Brazzaville and the stopover ports on the river - Ubangui and the river - Sangha waterways).

The SCEVN shall carry out development works on behalf of the government of the CAR and the Congo, to improve the navigability of the Sangha and the Ubangui. This will include breaking of rocks, dredging, construction of wharfs, damming of secondary arms of the river, periodic replacement of lighting facilities on 2,200 km of waterway depending on the availability of funds - 900 buoys per year, 400,000 cum of dredging per year, a programme involving breaking of

20,000 cubic metres of rock up to the year 1990, including 4,000 in the upper Sangha, 1,100 in the Lobaye and positioning of 2,000 markers a year to demarcate the banks of the rivers.

Also a World Bank pilot project involving the construction of three structures for the improvement of the navigability of the lower Sangha was carried out by SCEVN.

- In Zambia, there are plans to construct navigable passes on lakes Mweru and Bangwelu for fishing purposes.

(b) Planned projects

- On the Sangha: On completion of a pilot project on the construction of "castor" dams on secondary arms of the river, the World Bank and the Government of Congo and the Central African Republic would like to develop the entire lower Sangha reach, 21 "castors" dams are envisaged under this project.

- On the Ubangui: The drastic reduction in the rate of flow of the Ubangui has put the effectiveness of the works undertaken in the Zinga area into doubt. The governments of the Congo and the Central African Republic with their joint navigable waterways maintenance service, are looking for ways of improving this area with sills to put an end, once and for all, to the prolonged periods of unnavigability of the Ubangui. The UNDP Regional Office is interested in this project.

- Construction by Zaire of the Mobaye hydroelectric dam on Upper Ubangui was interrupted for technical analysis and for the approval of the CAR. In its present form, the dam hinders navigation on the Ubangui which was formerly navigable up to Oubango.

- With regard to Lake Tanganyika, the Zarian government had a systhesis report prepared and a study undertaken on the construction over the Lukuga of a structure for controlling the levels of the lake 1/.

This problem concerns all the countries bordering the lake; and the regulation of the water levels of the Tanganyika can be linked to an improvement of navigability on the Lualaba.

A series of projects have been proposed under the Transport Decade, for these countries.

Burundi

- Study for the extension of the Bujumbura port and construction of a shipyard for $0.8 million (INDP-05-001);
- Construction of transit storage facilities at Kigoma and Dar es Salaam at a cost of $9 million (INP-05-002).

The Central African Republic

- Study on the construction of a small river shipyard, at a cost of $0.4 million (INP-08-001);
- Study for the improvement of navigation on the Ubanqui river: Trans-equatorial route, at a cost of $1 million (INP-08-002).

The Congo

- Extension of the Brazzaville port and construction of secondary river ports at a cost of $32.2 million (INP-11-002).

Rwanda

- Study on the navigability of rivers and lakes at a cost of $0.3 million (INP-35-001);
- Study for the construction of a shipyard at a cost of $0.5 million (INP-35-002).

1/ See "Rapport technique de synthèse sur l'étude d'un ouvrage régulateur de niveau de Lac Tanganyika sur la Lukuga" - Government of the Republic of Zaire - CADIC - 1979.

Tanzania

- Study on Lakes Tanganyika and Victoria (and purchase of a new ferry for Lake Victoria at a cost of $9 million (INP-43-001).

Zaire

- Rehabilitation and renovation of the Onatra river fleet at a cost of $77.4 million (INP-40.00);
- Replacement of RVF equipment at a cost $6 million (INP-48-002);
- Stocking up of spare parts for the RVF and modernization of the shipyard at a cost of $1.86 million (INP-48-003);
- Study for the clearing out of rocky and sandy passes in the Kassai at a cost of $0.8 million (INP-48-004).

Central Africa

- Study for the establishment of a river navigation school for Central African countries at a cost of $0.4 million (INP-60-001);
- Study on the improvement of navigability of the Ubangui - river at a cost of $0.5 million (INP-60-002);
- Establishment of a co-operation body for the river Congo/Zaire/Ubangui at a cost of $3.8 million (INP-60-003).

For the Economic Community of the Great Lakes Countries (CEPGL)

- Study for the establishment of a joint transport company for Lakes Tanganyika and Kivu at a cost of $0.01 million (INP-60-006);
- Design and standardization of river navigation vessels at a cost of $0.5 million (INP-60-007);
- Technical assistance for the development of navigation on Lakes Malawi, Tanganyika, Victoria, Karibu, Mweru, Bangwelu and Kabora Bassa at a cost of $0.6 million (INP-60-008).

Finally, it seems that Tanzania and Zaire are interested in operating a ferry boat service on the Kalemie - Kigoma route to improve connection between the two railways.

3.5.2 Hydroelectric power

1. In Zaire. There are plans to rehabilitate the old hydroelectric power stations of the National Electricity Company, particularly those at Shaba, with the assistance of the World Bank. ($39 million of which $19 million from the IDA, $6.7 million from Belgium and $5 million from OPEC).

The government is looking for ways and means of electrifying the Matadi-Kinshasa railway to use the abundant energy surplus produced at Inga and also to help expand and improve the reliability of transport facilities, reduce cost price and cut down the importation of hydrocarbons.

The government wants to establish a big free industrial zone and a new port at Banana where it will develop big industries which consume a lot of power.

The 500 kilovolts high-voltage - (continuous current) line which serves the entire southern part of the country should enable Zaire to speed up its economic development through rational industrialization.

2. Zaire, Rwanda and Burundi - plan to undertake a project relating to the expansion of the capacity of the Ruzizi hydroelectric power station.

3. In the Congo - The government has, together with China, constructed a 100 Mw hydroelectric power dam on the Lefini river at Mboulou, as well as other small hydroelectric power stations (Kandeko 2 Mw, Adinga 4 MW, Assoumoundele 1 Mw.

4. In the CAR, the government is looking for funds to construct a hydro-electric power dam either on the Lobaye river (M'Baiku 24-32 MW) or on the Kotto (Kembe 40 MW) and also to construct a storage dam upstream (minimum regular rate of flow 20 cu. m/sec to regularize the output of the Boali run-of-river power station (18.8 MW) whose guaranteed power has decreased considerably due to further decline in the minimum discharge (effect of the prolonged drought).

5. Zaire and the CAR: the authorities of these countries would like to solve the technical problem at Mobaye by improving the navigability of the Upper Ubangui and also to produce hydro-power there.

6. The CAR and the Congo: A proposal has been made to solve the intermittent unnavigability of the Ubangui , downstream from Bangui by constructing a dam with variable heights on the Ubangui in the Zinga region. A connecting lock will also be constructed.

Since the Ubangui is wide with a very fast rate of flow at high water periods (8,000 cu. m/sec) the construction of such a structure, solely for navigation purposes would not be economically sound. This is why an additional economic justification is being sought, namely the production of hydroelectric power. Since the structure will have practically no reservoir, the guaranteed power can only be equivalent to the minimum rate of flow of the river, which has become very small.

Although, there will be optimum vertical drop at low water, the rate of flow will be small and the hydroelectric power capacity will also be very small (low fall structure). Similarly at maximum flow, the available power will be small, even nil, because the structure will be inundated and the difference between the water levels upstream and downstream will become small. This structure will therefore have two low periods per year as far as its hydroelectric capacity is concerned and this does not make the project attractive

Another way of solving the intermittent unnavigability of the Ubanqui is use of current techniques such as digging out of silts, concentration of water currents by dykes, groynes, rock embankments. However, all these are major works whose effectiveness can only be ascertained through costly, long duration studies on the hydraulic system. Besides, if the current drought on the continent persists, the minimum flow will be further reduced and the low water periods will be longer, which will further reduce the effectiveness of this type of natural channel improvement structure.

The UNDP Regional Office plans to finance, on behalf of the CAR, Zaire and the Congo, a preliminary study to establish the terms of reference of a study on the above-mentioned alternative development works ($265,000).

The study of a third solution which integrates all the factors in question is proposed in Chapter 4.

3.5.3 Irrigation: No data available. See Chapter 3.4.3. Vast resources remain unexploited whereas the countries are experiencing food shortage.

3.5.4 Opening up of the basin

All projects related to the opening up of the basin are included in the programmes of the United Nations Transport and Communications Decade for Africa:

(1) Railway projects, currently under way or being planned for further opening up the basin are as follows:

(a) New railways

- For the western part of the basin: The Ilebo - Kinshasa railway will be constructed to complement the existing Congo, Zaire and Kasai navigable waterways;

- For the centre eastern part of the basin, the Ubundu-Kindu railway will be constructed to complement the Lualaba navigable waterway;

- For the eastern part of the basin, a line will be constructed to link Bujumbura to the Dar es Salaam - Kigoma railway (1,255 km). This railway will be extended up to Lake Kivu via Kigali. There is also the Lake Tanganyika navigable waterway (Kigoma - Bujumbura - 175 km);

- For the northern part of the basin, the Mungbere - Pakwack railway will link up to the rail networks of Uganda and Kenya and continue towards the port of Mombasa (Indian Ocean) which is only 1,453 km from Pakwack. This connection will require the construction of approximately 320 km of new railway and expansion of the old railway in Zaire.

(b) Old railways

- Rehabilitation of the Benguela railway which has been damaged as a result of the war in Angola. This is the shortest route opening-up the south-eastern part of the basin; the section from Dilolo to Lobito is 1,348 km long. Some financing institutions including the UNDP are interested in this project, but any further action will depend on the return of peace to Angola;

- Realignment of the Congo-ocean railway (CFCO) is at an advanced stage. The project which involves a large amount of investment (about 38 billion CFA) will improve the capacity of the railway and of the waterway considerably. Other works to be undertaken jointly are extension and equipment of the rail river junction at Brazzaville and improvement of the ports of the river, the Uubangui, the Sangha and other tributaries. The project

comprises the construction of a new railway along a new route to go across the Mayombe highlands, as well as strengthening of the railway and replacement of traction equipment. This project will increase the capacity of the railway from between 3-4 million tonnes/year to more than 10 million tonnes/year, which will open up the basin considerably;

- Strengthening of the Matadi - Kinshasa railway (CFMK) and its possible electrification, expansion and modernization of the ports of Matadi, Kinshasa and Ilebo which are situated on the "Voie Nationale Zairoise" (rail-river link). (cf. Project on the modernization of ONATRA: financing $84.00 million including $26 million from the World Bank, $8 million from the KgW, $10 million from BADEA and $12 million from ADB);

- Construction of the M'Pulungu - Kassama railway in Zambia, for opening up the southern part of Lake Tanganyika.

(c) Roads: The major road projects to be carried out within the scope of the Transport and Communications Decade for Africa, are mostly aimed at opening up the Basin in the extreme north, the extreme south and in the west.

- In the north, an opening up "corridor" connecting Mombasa - Nairobi - Kampala - Kisangani - Bangassou - Sibut - Bangui - Bouar and continuing towards Enugu, links up to the Camerounian railway at the Doula port, and then rejoins the trans-African coastal highway up to Dakar. A feeder road starting from Kampala will pass through Kigali, Bujumbura and Kigoma; it will rejoin the Dar es Salaam - Dodoma highway at Bujumbura.

  This highway will open up the northern part of the basin to the Atlantic (Douala) and to the Indian Ocean (Mombasa).

- In the west, the Trans-African Highway will connect Bangui to Brazzaville via Ouesso and also Kinshasa to Luanda (this road will continue up to Windhoek). As seen from the country reports, the largest section of this highway is under construction by the government of the People's Republic of the Congo. Funds will be required to construct a bridge over the river Congo/Zaire between Kinshasa and Brazzaville and to construct the Kinshasa-Luanda and Ouesso-Bangui road sections.

- In the south of the Basin, the Beira-Harare-Lusaka-Lubumbashi-Dilolo-Lobito highway will be constructed to complement the Benguela railway.

Finally, as was seen earlier, the southeastern part of the basin is open by roads and railways constructed by the Government of Tanzania and Zambia (Tazara).

The general picture regarding the opening up of the Basin, therefore, shows an absence of Decade projects for opening up the vast central part of the basin.

The current effort by the Government of Zaire to construct the Kinshasa-Ilebo rail link and to extend the Kikwit road in the direction of Tshikapa-Kananga-Kamina notwithstanding the apparent problem of choice between waterways, railways and road transport, will further open up the central part of the basin. The extension of this road from Kamina to Kipaka and Bukavu or Kalemie, by waterway, road or railway would put the problem in a regional context, if it is carried out in successive sections.

4. Prospects for jointly developing and exploiting of the river and its tributaries

4.1 General

The possibilities for profitable co-operation between the riparian states in the basin are very wide ranging. It is up to the governments to select areas and issues of co-operation. This chapter, therefore, only presents proposals and suggestions, based on a limited amount of information and limited time for analysis. The objectives of these proposals are:

(a) to give examples of action which can be undertaken jointly in and around the basin;

(b) to give an idea of the activities that the future Organization will have to undertake as soon as it is established;

(c) to help the riparian states, right at the beginning, to make other concrete suggestions in accordance with their present priorities and preoccupations.

The criteria for selection are the following:

1. It is understood that the coming together of nine governments on development issues is an indication of the importance attached to the point in question.

2. The first projects which the Organization should carry out on its establishment should relate to:

- the shared resources;
- problems common to all the countries.

In this way, all the riparian states will be fully involved in their implementation. Later, when the Organization has acquired experience and is better organized it can (and should), at the request of the governments promote individual national projects. It has been possible to identify some major areas of co-operation during the present study.

The technical ministries and departments of the riparian states and of the organization should systematically pursue the collection and compilation of data; they should think beyond their own national territories and select projects on common interest.

It is of utmost importance that specific and useful tasks are assigned to the Organization as soon as it is established, so that it gets some focus and direction to major issues of concern to member States.

4.2 General development

4.2.1 General development of the northern part of the Basin: Improvement of the Navigability of the Ubangui and power production.

The drought currently affecting the continent has further reduced the water level and discharge of the Ubangui in the northern part of the basin.

For 109 days from February to May 1983, it was impossible to reach the capital of the Central African Republic and the northern parts of Zaire and the Congo by water transport, even at a drought of 0.9 m. The present hydrological data on the flood and low flows show that the situation will be just as bad or even worse in 1984 than in previous years.

There is a good chance that this wosening of the hydraulic regime in the northern part of the basin may not be temporary, since it is related to the drought which has been affecting the region lying south of the Sahara for more than ten years now and is intensifying from year to year.

The ultimate solution for opening up Northern Zaire, Northern Congo, the Central African Republic and part of Chad is to control the low water level of the Ubangui by constructing a dam on Upper Ubangui,. This will allow for economic navigation all year round right up to the Upper Ubangui (Zaire, CAR, Congo) and also provide local energy requirements cheaply for northern Congo and Zaire, whose present and past initiatives in this connection express their concern for the solution of these two basic problems.

Several possible sites exist on the Upper Oubangui for the location of this dam (Danga, Palambo, Mobaye, Satema).

The Republic of Zaire started construction of a dam at one of the sites purely for hydroelectric purposes (Mobaye) but had to stop the work to await the approval of the CAR.

1. GENERAL

1.1 The drought affecting the continent as a whole has considerably reduced the water level of the Ubangui. The direct consequence of this was the stoppage of navigation on the Ubangui, downstream from Bangui for 109 days from mid-February to mid-May, 1983 at the lowest draught of 0.90 m, which was below the minimum draught of 1.15 m required for economic and effective navigation.

1.2 In April 1983, the water level fell to 40 cm below zero on the Bangui scale for the second time since 1945. This corresponds to a rate of flow of 230 cu.m/sec only. Current hydrological study on the flood flow and low flow clearly shows that navigation on the Oubangui for 1983-84 will be the same as or even worse than that in February to May.

1.3 For the land-locked countries of the Central African Republic and Chad and for the northern parts of the Republic of Zaire and the People's Republic of the Congo, this considerable reduction in the flow of the Ubangui will have very serious consequences on their economies. The efforts made by these countries during the past 20 years and over (dredging, rock excavation) to improve the channel between Bangui and Brazzaville (target 1.30 m) and thus open up the central part of the Basin have yielded very unrewarding results.

1.4 The climatic changes in the continent for the past 15 years leave little hope for a rapid and stable return of the rainfall to its previous levels.

1.5 Besides, the development activities in northern Zaire and in the Central African Republic demand increasing quantities of cheap sources of energy to guarantee and speed up growth and profitability of existing economic structures.

So long as expensive energy is imported, these regions of the continent will only continue to grow at a slow rate. The power from existing hydro-power plants (for example the run-of-river power station at Boali) have been reducing considerably due to reduction in their flow caused by the drought This is why the Central African Republic is currently studying the possibility of constructing a hydroelectric power station capable of meeting the requirements of the capital and making it possible to construct new industries by cutting down the importation of fuel.

Similarly, the Republic of Zaire has decided to construct a hydroelectric power station on the Ubangui at Mobaye to meet the present and future needs of northern Zaire and has even started the preliminary works.

1.6 These two basic problems: Opening up and Local energy supply can be permanently solved by constructing a reservoir dam on the Upper Ubangui. The cost of such an undertaking should, therefore, be studied, in relation to present conditions.

2. Preliminary analysis

2.1 For more than 30 years now, efforts to improve/navigability of the Ubangui has consisted in improvement of rocky or sandy hills by rock excavation, dredging and concentration of currents by the construction of groynes and the closing of secondary arms.

This technique for natural channel improvement is used by fairly well equipped, competent, technical, national or bilateral organizations which are able to carry out their activities thanks to river taxes, government contributions and some external assistance. These technical organizations (RVF in Zaire, SCEVN in the Congo and Central African Republic) have very vital hydrological, topographical and geotechnical data. French and Belgian government organizations have similarly been accumulating data since the beginning of the colonial period (ORSTOM, Services et Bureaux d'Etudes Belges).

2.2 Preliminary analysis of available hydrological and topographical data as well as the recent flow conditions in the Ubangui show clearly that there are some good sites on the Upper Ubangui for the construction of a reservoir of adequate volume, particularly at:

- Banga at km 652.5
- Palambo at km 668
- Mobaye at km 978
- Satema at km 1,040

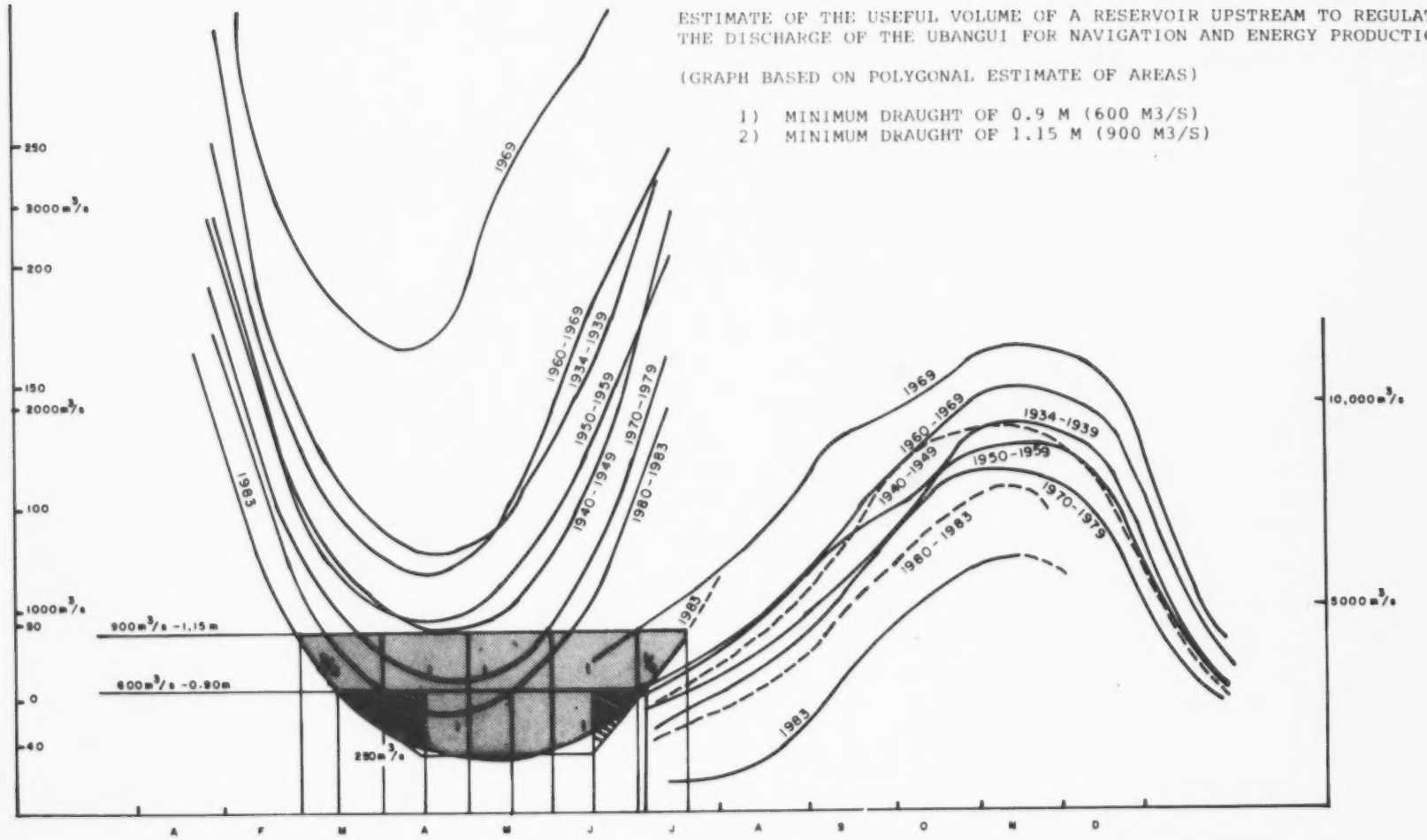
The mean slope of the Ubangui from Bangui to Kamba is estimated at 10-11 cm/km and there is a considerable drop of 4.5 m between kilometre 668 and kilometre 637 (of estimated slope of the water level from Bangui to Mobaye for Zero on the Bangui scale - SCEVN).

BANGUI

ESTIMATE OF THE USEFUL VOLUME OF A RESERVOIR UPSTREAM TO REGULATE THE DISCHARGE OF THE UBANGUI FOR NAVIGATION AND ENERGY PRODUCTION.

(GRAPH BASED ON POLYGONAL ESTIMATE OF AREAS)

1) MINIMUM DRAUGHT OF 0.9 M (600 M3/S)
2) MINIMUM DRAUGHT OF 1.15 M (900 M3/S)



In the region of the afore-mentioned sites, the Ubangui passes through a hilly area where its width is reduced in its narrowest parts to only a few hundred metres (250 to 550 m) and is separated by several rapids namely, the Elephant rapids (Bambeli and Lango) at Bangui, Palambo, Satema, Kowbaly, Zaoura etc.

2.3 Studies show that without new sill improvement works (rock clearing, dredging) conditions on the Ubangui would be as follows:

- a discharge of 600 cu.m/sec, corresponding to more than 1? on the Bangui scale gives a draught of 0.90 m on the Zinga sill downstream. It is this sill and the other sills in the Zinga area which are the most vital for the areas south of Bangui.
- a discharge of 900 cu.m/sec, corresponding to more than 40 cm. on the Bangui scale gives a draught of 1.15 m downstream in the area of the Zinga sill.

The attached hydrographs on the Ubangui at Bangui show the deterioration in the hydrology of the catchment basin of the Ubangui particularly during the last ten years.

It is obvious that if the current hydrological conditions persist, the direct sill improvement works (rock clearing, dredging etc.) alone will have very little effect on the duration of interruption in river transport.

2.4 The preliminary calculations made from the available data leads to the conclusion that:

A. A reservoir with a useful capacity of 6.2 billion on the Upper Ubangui will, without any further works, allow for all-year navigation downstream from Bangui at a minimum draught of 1.15 m during the lowest water period.

B. A reservoir with a useful capacity of 2.7 billion on the Upper Ubangui will, without further development works, allow for navigation all year round downstream from Bangui, at a minimum draught of 0.90 m during the lowest water period.

2.5 Looking at the situation solely from the point of view of navigation, it is seen that solution B is already very interesting because:

(i) The cost of constructing a reservoir with a useful capacity 2.7 billion cu.m. on the Upper Ubangui under present conditions will probably be reasonable in terms of transport activities during the years of the worst hydrological conditions. During the years of average hydrological conditions, such a structure will provide additional draught and make navigation substantially safe, A long term cost-benefit analysis (50 years) with a reasonable estimate of increase in cargo should be made.

(2) Such a structure would make it possible to extend the period of navigation on the Upper Ubangui by various proportions (to be calculated). At present the period of navigation is 3.5 months/year (from 15 August to 1 December) beginning at a water level of 4.5 cm on the Bangui scale. It is already known that medium-scale rock excavation (approx. 2,000 cu.m) during a year of normal flow will make it possible to extend the navigation period to 6.5 months per year, with a water level of more than 2.50 m of the Bangui scale (of SCEVN) from January to 15 December. Besides, by adding a lock to the structure upstream, the part of the reach corresponding to the reservoir will provide an excellent waterway upstream without any major works on the sills. The improvement of sills already programmed by the SCEVN could be concentrated on waterway downstream from the reservoir up to the Bangui and possibly on the extreme north.

Considering the deterioration in hydrological conditions on the one hand, and the improvements to take place through the reservoir upstream on the other, and the possibility of improving the navigability of the river as planned by the SCEVN (improvement of sills by rock excavation work) it can be said with a fair bit of caution, that the period of navigation on the Upper Ubangui could be extended from 3.5 months to 7 months per annum on the entire Upper Ubangui reach and all year round upstream of the reservoir.

It is seen, therefore, that the choice and study of a site for the reservoir on the Upper Ubangui is a task to be undertaken as a matter of urgency. This study should consider:

(a) The volume of the reservoir in terms of its effects on navigability downstream from Bangui.

(b) Effects on navigability between the reservoir and Bangui, taking into account the anticipated rock excavation works;

(c) Effects of the reservoir on navigation upstream, up to Komba or even to Uele;

(d) Energy production (guaranteed power, cost of KWH) of which optimization will be an important factor in the choice of the site and volume of the reservoir.

In conclusion, it is proposed that the River Basin Authority, as soon as it is established, should as a matter of priority make every effort to study and construct a flow control structure on the Upper Ubangui. The title and orientation of this study should be:

"Prospection and study of a site for a reservoir dam on the Upper Ubangui for improvement of navigability of the river and production of hydroelectric power."

This study could be executed in the following stages:

1st stage:
- Topographical cartography of the Upper Ubangui with reproduction of maps to 1/50,000th of the entire upper Valley at a gradient to be determined;
- Longitudinal profile of the Upper section of the river up to the M'Bomou and the Uele and horizontal profiles of the best identified sites;
- Revival of hydrological and meteorological stations and possible increase in the network. Compilation of all former hydrological data;
- Preliminary geological and geotechnological survey of the two most appropriate sites;
- Comparative study of the two sites on the basis of the same factors; detailed topographical and geological survey of the two selected sites. Preliminary study on structures and determination of their effects upstream and downstream as well as their hydrcelectric capacity. Recommendation of the better site to the River Basin Authority.

2nd stage: - Complete feasibility study on the selected site for multi-purpose development, navigation and power production. This study of the effects of the structure should include an estimate of additional work necessary on sills north of the structure at Bangui and north of the reservoir. This part of the study should be undertaken in close collaboration with the relevant local technical organizations (RVF, SCEVN and Departments of Energy of Zaire and the CAR).

2.6 Approximate calculation on a flow control reservoir on the Ubangui to ensure all year navigation and production of base energy.

A. The 1st method of calculation: based on the mean monthly flow of the year with the most deficit flow, 1983:

	Jan	Feb	Mar	Apr.	May	June
Mean monthly flow (cu.m/sec)	1270	.570	330	290	394	800
Deficit flow for 0.9 m draught (cu.m/sec)	0	30	270	310	206	0
Deficit flow for 1.15 m draught (cu.m/sec)	0	330	570	610	506	100

Corresponding gross volume of water (millions of cu.m)

(a) draught of 0.90m - 77.76 699.84 803.5 533.97 - $2.115\ 10^9\ m^3$

(b) draught of 1.15m - 748.4 1,526 1,581 1,355 298 $5,508\ 10^9\ m^3$

2nd method of calculation based on polygonal approximation of the area under the low flow hydrograph for 1983

(a) - (600-250 cu.m/sec x 30 days x 24^h x 3600^1 ($\frac{1}{2}+\frac{1}{4}+1/1$) = 2,75x350 cu.m/sec
sx2592,000
= 2,494.8.10^9 sq.m.
= 2.5 billion cu.m.

(b) - 2,494.8 billion cu.m + (900-600)cu.m/sx30 days = x24^h x $3,600^1$ (3/4+1/1+1/1+$\frac{1}{4}$)
+= 2,494.8 + 3,110.4
= 5,605.2
= 5.6 billion cu.m

C. Observations

(1) The reservoir is upstream from Bangui and the hydrological data used are those of the Bangui water level recording scale. The results obtained do not take into account the effects of the water between the location of the reservoir (not yet determined) and Bangui. Thus, the calculations on the volume of the reservoir are overestimated.

(2) This is a rough estimate which only gives the range of volumes of reservoir to be sought for on the Ubangui with a view to

(a) show whether it is reasonable to anticipate improvement of the navigability of the Ubangui by increasing the low flow, which will also make it possible to produce the basic energy required by the riparian states;

(b) gear the preliminary prospection for dam sites towards the selection of an average volume reservoir with a reasonable implementation cost.

It should be emphasized that these calculations relate to the volume of the useful section of the water in the reservoir to which should be added the dead volume (the unused volume of water at the bottom of the lake), evaporation from the surface of the water and seepage.

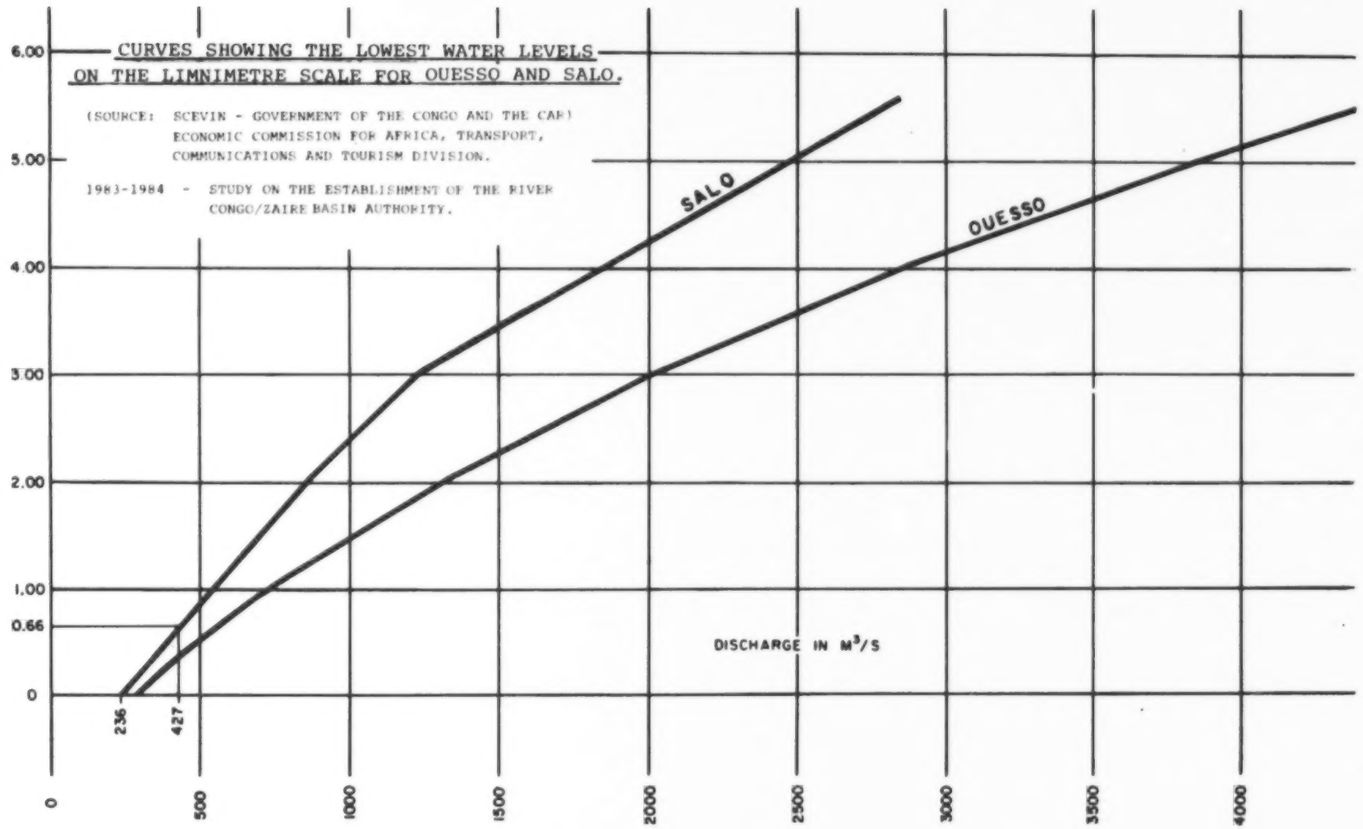
Conclusion: By taking an arbitrary margin of 10 per cent, the search for a site should be aimed at:

- an economical reservoir of 2.7 billion cu.m for all year round navigation at a minimum draught of 0.9m downstream from Bangui;
- an economical reservoir of 6.2 billion cu.m for all year round navigation at a minimum draught of 1.15 m downstream from Bangui.

Other factors to be taken into account in the choice of the site are:

- improvement of the navigability of the river from the site up to Bangui and upstream, within the artificial lake.
- production of base energy, a need clearly expressed by ECA and Zaire.
- political and financial aspects: if Mobaye is a fairly good location for an artificial lake of between 2.7 billion to 6.2 billion cu.m, it would be good to decide to regionalize the Mobaye project and to reclassify it to give it multiple functions" Energy production and opening up of the entire northern part of the basin.

A verbal and preliminary information from local technical services indicate that a 30 m. high structure at Mobaye would give a reservoir of more than 5 billion cu.m. of which the backwash would go as far as Kemba or even up to Yakoma.


CURVES SHOWING THE LOWEST WATER LEVELS ON THE LIMNIMETRE SCALE FOR OUESSO AND SALO.
(SOURCE: SCEVIN - GOVERNMENT OF THE CONGO AND THE CAR)
ECONOMIC COMMISSION FOR AFRICA, TRANSPORT, COMMUNICATIONS AND TOURISM DIVISION.
1983-1984 - STUDY ON THE ESTABLISHMENT OF THE RIVER CONGO/ZAIRE BASIN AUTHORITY.
SALO
OUESSO
DISCHARGE IN M³/S
6.00
5.00
4.00
3.00
2.00
1.00
0.66
0
236
427
0
500
1000
1500
2000
2500
3000
3500
4000

PRELIMINARY CALCULATION ON A RESERVOIR TO REGULATE NAVIGATION ON THE UPPER SANGHA AT A MINIMUM DRAUGHT OF 0.9 M ALL YEAR ROUND

1ST CALCULATION (HIGH ESTIMATE)

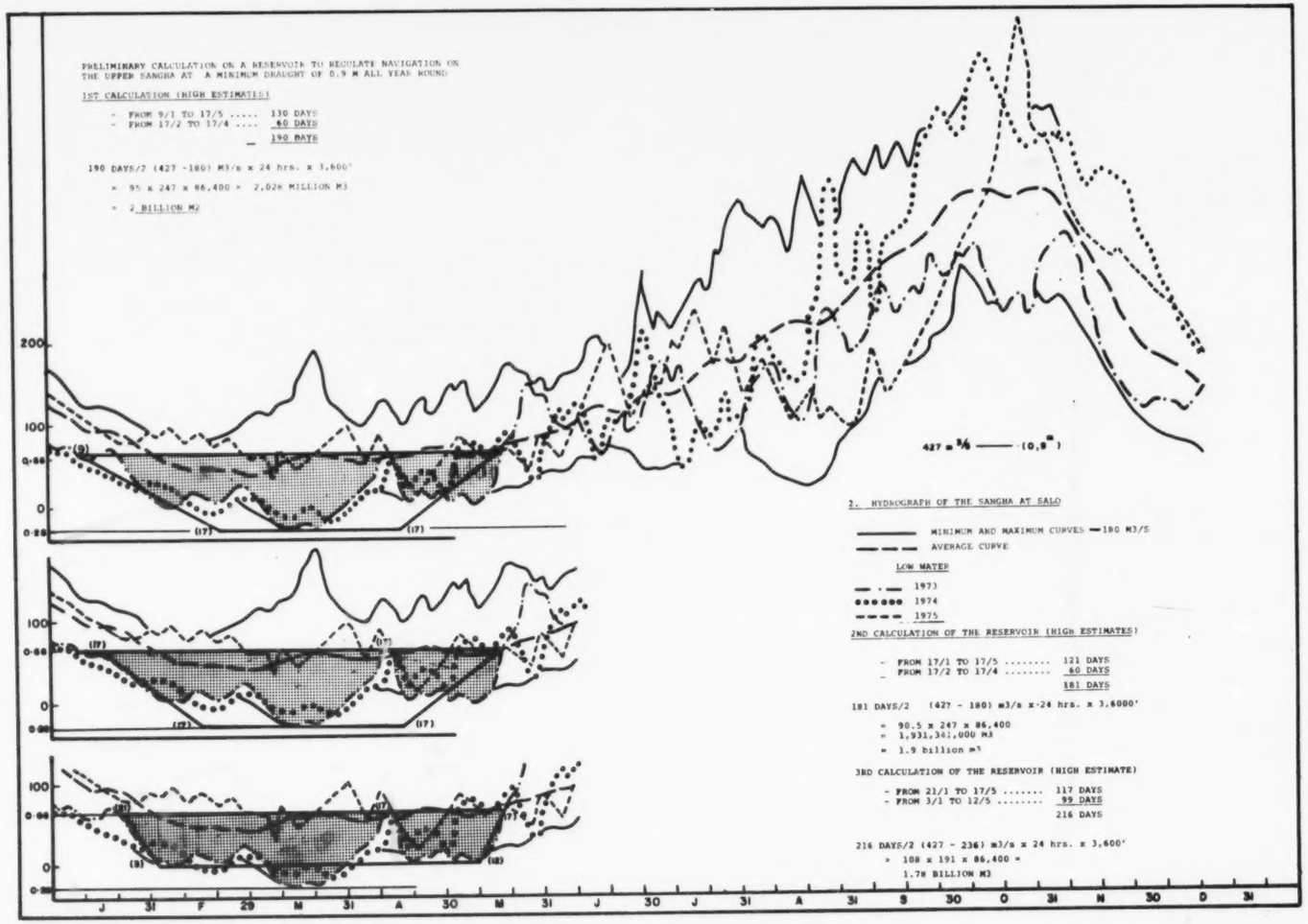
- FROM 9/1 TO 17/5 ..... 130 DAYS
- FROM 17/2 TO 17/4 .... 60 DAYS

190 DAYS

190 DAYS/2 (427 -180) M3/s x 24 hrs. x 3,600'

= 95 x 247 x 86,400 = 2,028 MILLION M3

= 2 BILLION M2



2. HYDROGRAPH OF THE SANGHA AT SALO

——— MINIMUM AND MAXIMUM CURVES — 180 M3/S
— — — AVERAGE CURVE

LOW WATER

— · — 1973
●●●●●● 1974
– – – – 1975

2ND CALCULATION OF THE RESERVOIR (HIGH ESTIMATES)

- FROM 17/1 TO 17/5 ..... 121 DAYS
- FROM 17/2 TO 17/4 ..... 60 DAYS

181 DAYS

181 DAYS/2 (427 - 180) m3/s x 24 hrs. x 3,6000'

= 90.5 x 247 x 86,400
= 1,931,341,000 M3
= 1.9 billion m3

3RD CALCULATION OF THE RESERVOIR (HIGH ESTIMATE)

- FROM 21/1 TO 17/5 ..... 117 DAYS
- FROM 3/1 TO 12/5 ..... 99 DAYS

216 DAYS

216 DAYS/2 (427 - 236) m3/s x 24 hrs. x 3,600'

= 108 x 191 x 86,400 =
1.78 BILLION M3

(1) APPROXIMATE CALCULATION ON A FLOW REGULATION RESERVOIR UPSTREAM CAPABLE OF ENSURING ALL-YEAR ROUND NAVIGATION AT THE MINIMUM DRAUGHT OF I.30 M FOR THE YEAR OF VERY DEFICIT FLOW 1973

- FROM 1/1 TO 3/4 (5D) FROM 22/4 TO 14/5 ... 23 x 24 = 552 DAYS
- FROM 27/7 TO 25/8 AND FROM 4/9 TO 9/9 ... 40 x 13 = 81 DAYS
633 DAYS

- V = 350/2 (643) -621.5) M^3/S x 24 h x 3,600" = 221.5 M3/S x 75 DAYS x 86,400" = 1,435,320,000
V = 1,435 BILLION CU.M

(2) RESERVOIR FOR ALL-YEAR ROUND DRAUGHT OF 1.30 M ON THE LOWER SANGHA

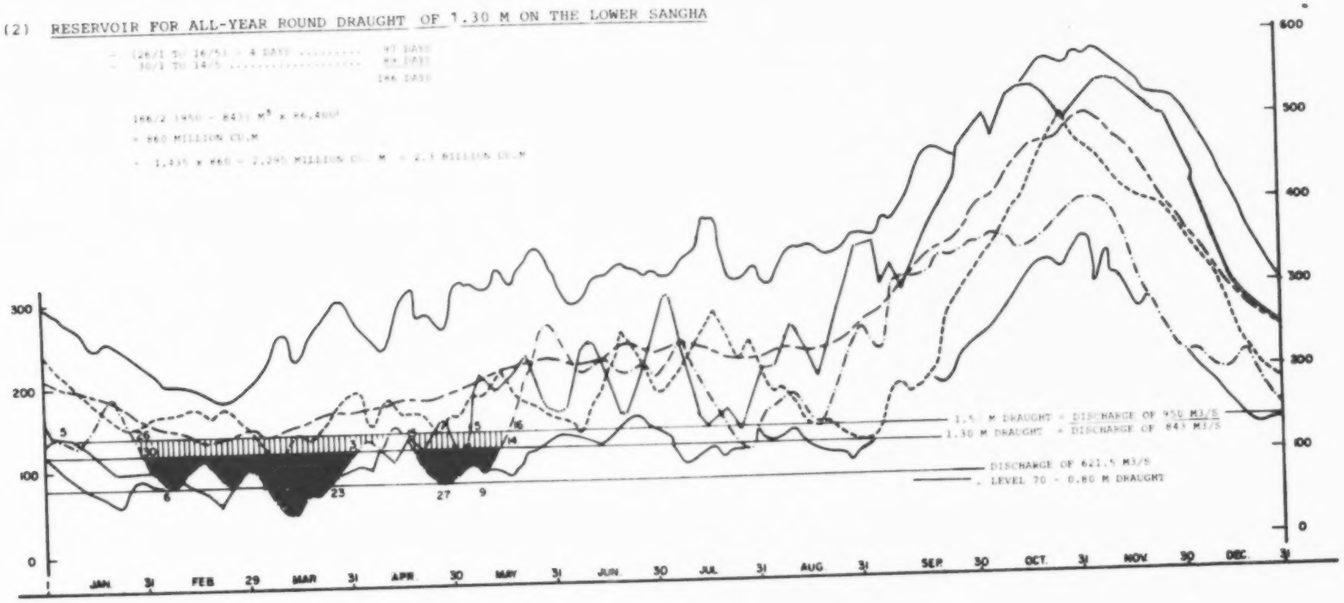
- (26/1 TO 16/5) = 4 DAYS ..... 97 DAYS
- 30/1 TO 14/5 ..... 89 DAYS
186 DAYS

186/2 (950 - 843) M^3 x 86,400"
= 860 MILLION CU.M
- 1,435 x 860 = 2,295 MILLION CU. M = 2.3 BILLION CU.M

HYDROGRAPH OF THE SANGHA AT OUSESSO

RESULTS OF READINGS FROM 1954 TO 1975

MINIMUM AND MAXIMUM CURVES
AVERAGE CURVE
AVERAGE WATER LEVEL
1973
1974
1975



It is proposed that the Basin Organization should immediately select sites on the Upper Ubangui, then undertake feasibility study on the best location of a multiple purpose reservoir dam with a view to making the Ubangui and Upper Ubangui navigable all year round and to produce hydroelectricity for northern Zaire and the CAR.

This project will directly concern the Congo, Zaire and the CAR.

4.2.2 Development of the northwest of the Basin: Improvement of navigability of the Sangha and energy production

(a) The CAR and the Congo, with the assistance of the World Bank, have undertaken a study and pilot projects on the improvement of the navigability of the Lower Sangha which has to deal with a high and rapidly increasing volume of traffic. This relates to a new technique of dam construction designed to block the secondary arms of the river so as to concentrate the water currents on a channel, thereby improving the draught. Cameroon which has a large share in the freight on the Sangha, should be involved in this project.

(b) The deterioration of hydrological conditions on the Sangha following the draught is the same as that on the Ubangui - Also the World Bank project only has an effect on the Lower Sangha.

It would be adviseable for the Organization of the Basin, on behalf of the CAR, the Congo and Cameroon to study the possibilities for improving the navigability of the Upper Sangha and the N'Goko by means of a combination of improvement of sills in natural channels (see the SCEVN programme) and the selection of a site for a reservoir upstream to improve the low flow. Such a project would have the benefit of improving navigability on both Upper and Lower Sangha.

(c) A calculation of volume shows that a maximum of 2 billion cu.m of reservoir on the Upper Sangha would suffice to guarantee all year navigation at a minimum draught of 0.9m on the Upper Sangha and a gain (without further works) of at best 30 cm in the draught of the Lower Sangha:

1 - On 760 km of navigable water way from the Sangha to Nola, the Upper Sangha is unnavigable at 0.9m draught for 120 to 130 days in the year: the Lower Sangha is unnavigable for 10 days per year at the same draught.

2 - The draught which has been intensifying from year to year on the continent is gradually worsening navigability. The figures previously cited are interannual averages not representative of the deterioration in recent years. Similar to the Oubangui, 1983 and 1984 were years of very low flow. For the Sangha, 1983 and 1984 were equally bad years. (see attached hydrographs).

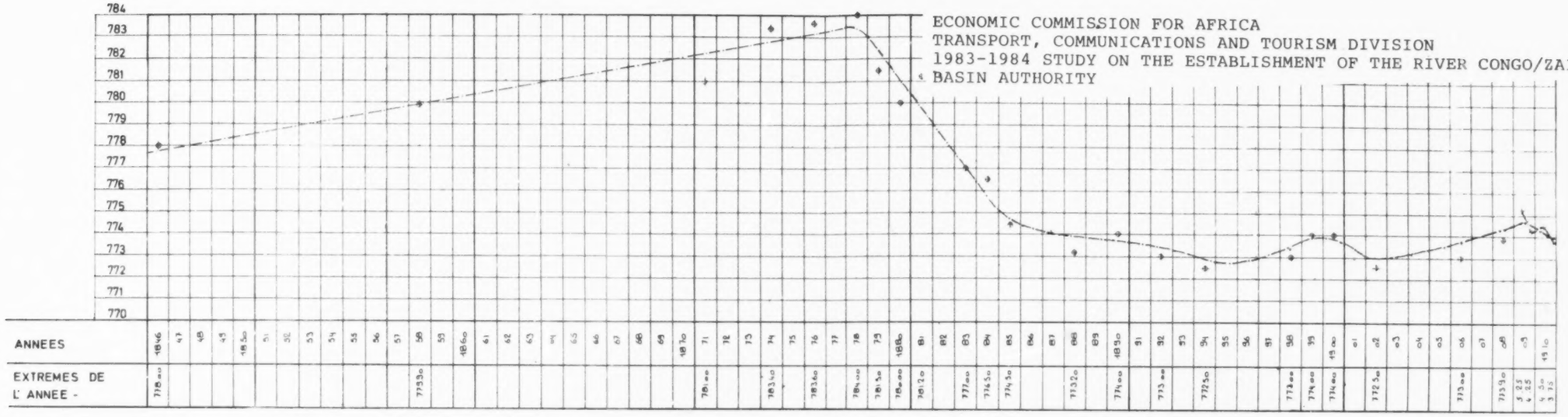
3 - Navigation at 0.90m is not economical. According to Transport companies, river transport is profitable from a draught of 1.15 m onwards. In other words, the shorter the period of navigation at 0.90m in the year, the more profitable the river transport.

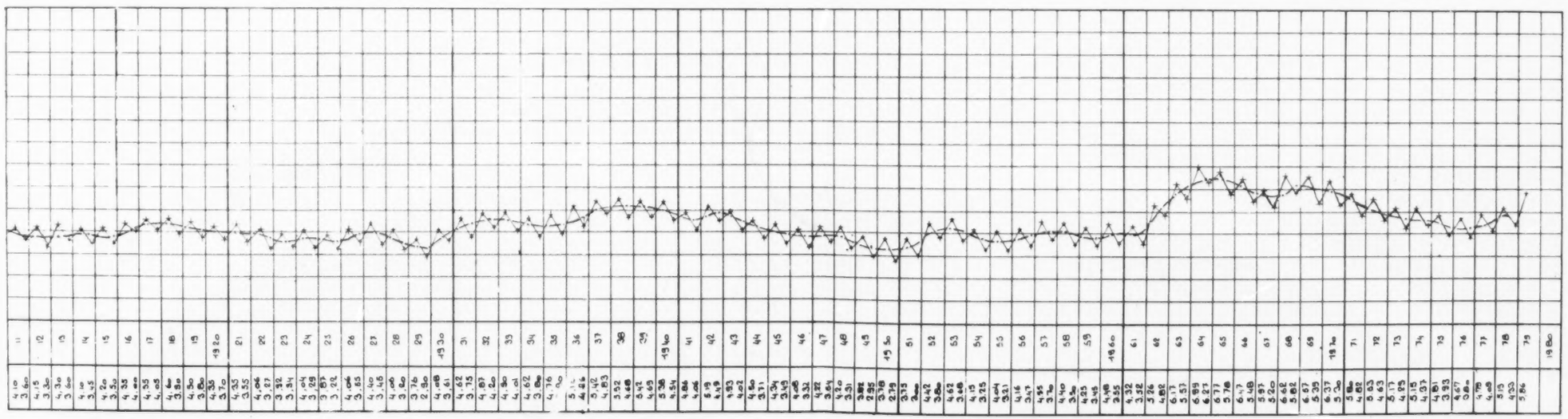
4 - It is known that at a rate of flow of more than or equal to 427 cu.m/sec it is possible to have all year navigation at 0.90m. At present the minimum discharge at Salo during the low water period is 180 cu.m/sec

5 - The calcuations of the reservoir capable of producing a rate of flow of 427 cu.m/sec at Salo during the 120 days (at least) of current unnavigability are based on optimistic successive approximations (Nos. 1, 2 and 3). These calculations figure on the attached low and high flow hydrographs of the Sangha at Salo.

LEVELS OF THE LAKE TANGANYIKA FROM 1946 to 1980
(SOURCE ETUDE CADIC - GOVERNMENT OF ZAIRE)

ECONOMIC COMMISSION FOR AFRICA
TRANSPORT, COMMUNICATIONS AND TOURISM DIVISION
1983-1984 STUDY ON THE ESTABLISHMENT OF THE RIVER CONGO/ZAIRE BASIN AUTHORITY





The first estimate suggests a reservoir of 2 billion cu.m, the second less excessive puts the capacity at 1.9 billion cu.m and the third, the most precise gives the volume as 1.8 cu.m. The adjustment curves of the Ouesso scale are attached. A reservoir with a volume of between 1.8 billion to 2 billion cu.m upstream would be adequate to ensure all-year navigation at a minimum draught of 0.9m downstream from Salo.

On the basis of the optimistic estimate, the volume of reservoir necessary upstream to ensure all-year navigation at 1.30 m draught in the Lower Sangha was also calculated. The calculation of the volume is given on the hydrograph of the Sangha at Ouesso (No.4). A diagram of the approximation shows that a reservoir of between 1.4 billion to 1.5 billion cu.m. upstream would make the Lower Sangha navigable all-year round with a draught of at least 1.30 m.

These calculations of volume are meant to show the benefit that would be derived from prospecting the Upper Sangha to find the best site for a storage dam of between 1.8 billion and 2 billion cu.m and to undertake detailed study of its investment cost, its hydroelectric capacity and its management. The Nambere, a tributary of the Upper Sangha has a deep narrow valley and a slight slope which is favourable to the creation of a big reservoir, preliminary prospecting of site could start with this tributary.

6. The activities for the improvement of the navigability of the Lower Sangha undertaken by the People's Republic of the Congo, the CAR and the World Bank include the construction of 21 castor type dams designed to produce a minimum draught of 1.25 m. The cost of these works are not known but they would not improve the navigability of the Upper Sangha. Calculation No. 4 shows that a dam upstream designed solely for maintaining a draught of 1.30 m is the Lower Sangha would only require a reservoir of between 1.4 billion to 1.5 billion cu.m for the most deficit year.

It would not be impossible to find an economic site on the Upper Sangha for such a modest reservoir. It would be adviseable, therefore, to compare the cost of such a storage dam with the cost of the proposed construction of 21 castor dams on the Lower Sangha, taking into account all the additional advantages such as these:

- marked improvement of the navigability of the Lower Sangha (1.30m instead of 1.25m of draught)'
- improvement of the navigability of the Upper Sangha with a draught of 0.90 m.

- possibilities for the production of hydroelectricity,
- guarantee of greater efficiency if the present draught cycle continues;

Finally, the study on the best site for the reservoir, should take into account the possibilities for river transport between the storage dam and Salo on the one hand, and within the artificial lake on the other.

(d) Conclusion

The Organization should undertake the necessary studies to determine the most advantageous combination of development techniques for the whole of the Upper and Lower Sangha, in co-operation with the World Bank, which is already active in this sector and the SCEVN. The rock excavation programme of the latter in the Upper Sangha could be re-examined in terms of the effects of a reservoir upstream, the volume of which will depend on the nature of sites that would be found.

On the Sangha as on the Ubangui all decisions concerning already planned development works downstream should be subject to preliminary prospection of sites for the reservoir dam in the Upper Basin and to a comparative analysis of investments based not only on river transport, but also on the needs of the countries in basic energy.

4.2.3 General Development of the south-eastern part of the basin

(1) Stabilization of the level of Lake Tanganyika is a problem shared by all countries bordering the lake: Zaire, Burundi, Tanzania, Zambia.

9. GENERAL

The level of the lake has been measured since 1846. At very high levels it drowns the port installations and at very low level disrupts navigation and access to the ports. (see the attached diagram of the levels of the lake from 1846 to 1980).

High water level of the Lake in 1878 caused the collapse and the washing away through erosion of the natural dam which had formed at its outlet, the Lukuga.

In October 1937, the Belgian colonial services undertook the cleaning out of the Lukuga to improve drainage of the lake into the Lualaba. This project was completed in 1940 and achieved the expected results.

The Engineer Ossosof cleverly employed the technique of self-dredging to cut down the volume and cost of the project but the drainage capacity of the Lukuga was improved.

A 1949 report of the chief Engineer E.J. Devroey entitled "A propos de la stabilisation du niveau du lac Tanganyika et de L'Amélioration de la Navigabilité du Fleuve Congo" summarizes the lessons learned acquired and proposes solutions which integrate stabilization of the levels of the Lake and improvement of the navigability of the Lualaba through improvement of low flow.

1.1. As far back as 1950, a Commission comprising representatives of zaire (then the Belgian Congo), Zambia (then northern Rhodesia), Tanzania (the Tanganyika) and the East African Railways and Harbours and mini stations made the following recommendations:

(a) to make all sections of the Lake navigable;
(b) to improve the navigability of the Lualaba downstream from the confluence of the Lukuga;

1.2 After the large-scale damages caused by the exceptional flooding of the lake in 1964, an international conference attended by Burundi, Zaire and Tanzania was held in Bujumbura in April 1964. The Conference concluded that the available base data was insufficient and that a joint organization should be established to carry out a regional study on the entire lower basin of Lake Tanganyika within the framework of close co-operation between the riparian states so as to find a final solution to the stabilization of the level of the lake.

1.3 In July-August 1969, a tripartite meeting between Burundi, Rwanda and Zaire decided that the countries should co-operate to carry out a synthesis study, on the basis of which the 3 countries together with Zambia and Tanzania would formulate a joint request to be submitted to financing agencies.

1.4 In July 1972, Burundi submitted a request to ECA asking for assistance in establishing an inter-state organization for the Lake Tanganyika-Kivu basin and preparing a draft study on the hydrometeorology of the lower basin. After consulting the other riparian countries, ECA organized a meeting of experts from the countries and representatives of international agencies (UN, UNDP, OAU, WHO, UNESCO, FAO, WMO, UNEP) from 26 to 29 May 1975 at Addis Ababa. This meeting decided:

(a) that an inter-state organization should be established to promote the development of the lower basin including Lake Kivu;

(b) that the said technical committee should prepare a project document for requesting assistance from the UNDP to undertake studies on multi-purpose development of the lower basin.

This technical committee held its first and last meeting from 26 to 30 June 1975 at Bujumbura, at which a draft study on multi-purpose development of the lower basin was prepared along the same lines as the study on the Kagera. The various interventions of United Nations specialized agencies led to a division of the initial project into various "preparatory phases". The last initiative was a proposal by the WMO to send a joint UNDP/WMO/UNOTC mission to the riparian states to get them to sign a request for preparatory assistance.

In 1978-1979, ECA was still involved in this through a request by Tanzania to UNTCAD to review the available data, to evaluate necessary action to complete the information network (particularly hydrological and meterological to review existing studies on the basin and define the relevant projects (9 months - 3 experts costing $US 193,000 still not financed).

Finally, in November 1979, the Government of Zaire asked that a technical summary report of the study on the construction of a structure for controlling the level of Lake Tanganyika on Lukuga (CADIC) be prepared for it.

(b) Activities to be undertaken

The study on stabilization of the level of Lake Tanganyika should be resumed and finalized by the Organization of the Basin on the wider scale of integrated hydraulic development of the south-eastern part of the Basin. This should begin with a serious hydraulic and topographical study of the entire bed of the Lukuga. The data from the study could serve as the basis for a project on the measurement

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of the water level of the Lukuga, bearing in mind that a deepening of the Lukuga bed, if it can be done economically, will be more effective than broadening it. The same study could analyze the possibility of making the Lukuga navigable through the construction of the flow control structure on it as well as the addition of a lock and possibly other specific structures also.

Similarly, this study should analyze the possibility of stabilizing the lake at a level which allows a section of it to be utilized to guarantee regular flow, thus increasing the low flow of the Lualaba improving navigation during low water period when the water level is lower than the stabilized level of the Lake.

The study should also assess the development works necessary at lake ports to adapt them to the selected level. This would help improve the safety of ports during years of high flow by ensuring:

- a very marked increase in the drainage capacity of the Lukuga (calibration mainly by excavation)
- a good permanent safety margin corresponding to maintaining a fairly low water level (a depth of 10 cm into the lake corresponds to 3.15 billion cu.m.) in anticipation of years of high flow.

Finally, the adaptation of the port infrastructures to a fairly low water level would be the only possible solution to the problems posed during years of low flow.

The study should also include assessment of the cost of corresponding civil engineering works.

(c) Policy to adopt

Stabilization of the levels of Lake Tanganyika is a subject for practical co-operation which the future Organization of the Basin should try to execute soon after its establishment. Obviously, for reasons of efficiency and taking into account lessons of the past, the Organization should as a first step, concentrate efforts strictly on regulating the levels of the Lake, and refuse to incorporate in the study any other aspects of general development apart from flood protection and navigation.

To those who believe that general hydrometeorological and other studies should be undertaken first, it can be said that Lake Tanganyika is a reservoir which has been known over a long period of time to have fluctuations in level.

These fluctuations embody all the natural factors which are not well known.

The study undertaken by Zaire (CADIC) is excellent, in the sense that it constitutes a synthesis of all known data and its conclusions are perfectly logical as regards subsequent studies to be undertaken for the definition of an actual project:

- Since 1846, the Lake Tanganyika has fluctuated between a minimum of 772.9m above sea level (1929) and a maximum of 776.99 m above sea level (1964).

The levels of the Lake were exceptionally high in 1938, 1964, 1968 and 1979 and very low in 1912, 1929 and 1950 (see the diagram on the levels of the Lake). The standard statistical methods put the mean high flow at 96 cm, the hundred year high flow at 190 cm and the thousand year high flow at 230 cm (Goodrich Law). The average low flow is put at 68 cm, the hundred year low flow at 104 cm and the thousand year low flow at 115 cm (Gauss Law).

- In consideration of existing port installations, it is requested to keep fluctuations of the level of the Lake between 773.5 m above sea level and 775.5 m above sea level.
  The study does not include an evaluation of investments required to adapt the ports to the various stabilization levels or to the natural level variations which for the past 55 years have not been more than 3 metres.
- The study undertaken by Zaire (CADIC) related to the construction of a flow control structure; taking into account this range of levels (773.5 to 775.5) over the past 55 years. This study proposed a flow control structure with variable height, but did not include a detailed study on the calibration of the drainage channel, namely the Lukuga, in re;atopm to the maximum discharge during the years of hign flow based on several hypothetical levels of stabilization of the Lake.

Consequently, the study to be undertaken immediately should include:

(a) A study on the Lukuga, from the Lake up to the confluence. This study should lead to an evaluation of the volume of work and the cost involved in calibrating the Lukuga to enable it evacuate a variable maximum flow.

In order to discharge an amount of water corresponding to one metre of the Lake Tanganyika in a year, the Lukuga should flow at a rate of 1000 m3/s (in addition to the discharge of its own lower basin), or 1 billion cu.m in a year. The study on calibration should also consider navigation possibilities on the Lukuga.

(b) The study of Lake Tanganyika ports for defining the cost of civil engineering works required to adapt them to the various average stabilized levels of the lake, including the hypothesis of no stabilization.

(c) The search for optimum development in terms of:
- investment cost;
- long term economic benefit which should also include the secondary effects downstream of the Lake.

Finally, it is very possible that the conclusion is reached in the proceeding study that the Lukuga on its own cannot economically drain sufficient amount of water to satisfactorily stabilize the Lake. This is why it is proposed to find an additional drainage source through another pass in the mountain chain surrounding Lake Tanganyika. The study of such an additional solution will be subject to the results of the first.

2. Development of the Upper River

In addition to the flow control qualities related to the stabilization of Lake Tanganyika, it is possible to study ways of improving the navigability of the Upper River in association with:

- regulation of the discharge of the Luvua from Lake Mweru. The Pweto catchment basin is 218,640 sq.km or 9/10 of the lower basin of Lake Tanganyika. The mean annual rate of flow of the Luvua is 300 cu.m/sec most of which drains into the Lualaba. Loss through evaporation on Lake Mweru is much lower than that on Lake Tanganyika (area) for a catchment-basin of the same size, and the years of poor navigability on the Luluaba also correspond to the low flow years of the Luvua. It would therefore be worthwhile to conduct studies on improvement of the low flow of the Luvua using the reservoir of Lake Mweru to improve the navigability of the Lualaba. This solution also proposed in the reports of Devroey and CADIC deserve to be studied in more detail.

- The possibility of linking navigation between the Kasenga-Pweto (Lualaba-Mweru, 275 km) and the Kiamba-Luvua confluence (160 km) reaches on the Luvua, by undertaking detailed study should be undertaken in order to assess the possibilities for natural channel improvement and canalization.

- The study should take into consideration increasing the guaranteed power of the Piana Mwanga plant during the low flow, and preliminary studies should be carried out on a lock for this structure.

This second part of the study should be carried out as a supplement to the study on stabilization of the level of Lake Tanganyika, in relation to the navigability of the Lualaba.

All the studies proposed for the eastern-central part of the Basin are aimed at:

- improving the behaviour of Lake Tanganyika;
- improving navigation on the currently navigable waterways;
- studying the possibility of making certain reaches navigable (Luvua, Lukuga, the Upper Lomani reach).

4.2.4 Development of the north-eastern part of the Basin

1. The Kisangani-Udundu reach

It seems that studies have been conducted on the unnavigable Undundu-Kisangani reach, where the Stanley falls makes navigation impossible.

The existence of iron ore deposits in the area could justify the construction of a major hydroelectric plant on this reach. The Wagenia, Wanie Rukula and Mutshangani hydroelectric plants have a total capacity of 2,437 MW. It would be advisable to review existing preliminary studies, with a view to developing this reach for river transport.

The study on the development of this reach for navigation and for energy production would make it possible to know if such development works, with or without the production of energy, would not be more justified and profitable than the Ubundu-Kindu rail link planned under the Transport and Communications Decade. Such development works would, with only a few major crossing structures (locks, canal-lifts), provide a continuous navigable waterway of approximately 2,140 km, plus the possible benefit of local source of energy for the development of the economy

in this area where the only major power plant has a small guaranteed power 6,200 kw (Tshopo) out of the installed capacity of 12,400 kw.

2. Kongolo-Kindu reach

Similarly, the Organization of the Basin should collect data and proceed on a study on the unnavigable Kongolo-Kindu reach with a view to multi-purpose development of the reach, in relation to the possibilities of discharge control upstream (chap. 4.3.1 and 4.3.2). Just as for the previous study, it should be established whether the "Portes d'Enfer" waterfalls can be developed for navigation and for production of energy in the long term.

One of the fundamental roles of the Organization, even with respect to long-term perspectives, is to specify all development possibilities and to systematically draw up a long-term general development plan which harmoniously integrates medium-term projects and those for the foreseeable future.

4.2.5 Development of the central part of the Basin

General study on possible links between Upper Lualaba and Upper Kasai

In view of the great density of the river network of the Upper Kasai, Upper Lomani and Upper Lualaba, it would be adviseable to study the possibility of constructing canals to link them at the following places:

(a) between the Lubefu towards Lubefu and the Upper Lomani downstream from Tsofa;

(b) between Upper Lualaba and upper Lomani towards the swampy area east of the Katompo-Kbombo highway.

The first phase of this project should be a preliminary study comprising the following:

- A topographical cartography to a scale of 1/25,000th (or 1/50,000th with intercalary contour lines) between longitudes 20° and 27° and latitudes 4° and 8° south. This area could be reduced if there is adequate topographical data, in which case the scope of the study should be limited and focused on the selected areas. This basic topographical data will however be useful to all sectors of development in the future;
- A series of hydrological studies aimed at establishing a basic limnograph network, preparing the longitudinal profile of the waterways concerned and finding out their natural navigability at different rates of flow;

- If the results of topographical surveys and previous studies are encouraging, the best alternative links between the natural reaches should be selected; a preliminary estimate of the volume and cost of the works for various droughts after geotechnical studies should be made, as well as preliminary estimates of the hydraulic effects on the waterways concerned; preliminary studies of the major structures required should also be planned.

These preliminary studies will show whether it is economically possible to extend navigation by the "Voie Nationale" towards the Lualaba by constructing two connecting canals and canalizing certain reaches.

Such development works have been undertaken in stages in several parts of the world, especially in Europe.

The aim would be to work out the possibility of a direct link between the navigable waterways east and west of the basin through the tributaries of the Upper Kassai and thereby establish, in successive stages, an east-west transport route to link navigation on Lake Tanganyika to the network of navigable waterways in the rest of the basin. The feasibility of such a project, which appears impossible at first, can only be confirmed after specific studies.

The risk involved in conducting such studies, for example, is a hundred times less than that of petroleum exploration. The stake is worth the cost because it involves opening up the entire central part of the Basin and the region of the Great Lakes by the most economical mode of transport.

4.3 Opening up

(1) Navigable waterways

- A major programme of studies and projects to improve the main network of navigable waterways for opening up the subregion is proposed in chapter 4.2;
- In addition to this programme, the Organization of the Basin should undertake a specific study on the entire waterway network with the aim to:
  - (a) Determine all the possible improvements of existing waterways;
  - (b) Draw up new waterway development projects either by canalization of the unnavigable waterways or by artificial canals or rail link.

These studies cannot be undertaken in isolation from the other economic objectives with respect to irrigation and energy; they should be integrated in national programmes and priorities for exploitation of the natural resources (mines, industries, forests, fishing etc.).

In this connection, the Organization of the Basin should also focus attention on opening up the Basin itself, particularly the central part. The Organization should also aim at developing river transport routes between the riparian States so as to promote the development of inter-state trade.

The Organization of the Basin should strive to harmonize conditions of operating navigable waterways through the following actions:

- transport co-ordination;
- standardization and improvement of navigational aids (buoyage; flood warnings);
- study and proposal to member States of a common navigable waterways operating regulation, harmonization and co-ordination of navigation control and waterway policing;
- preparation and final updating of a common navigational atlas.

It should be emphasized that when the International Convention on the river is approved by the riparian states, all projects relating to improvement on equipment of a reach of the River, even if this reach is entirely within a single state, should be examined beforehand by the Organization of the Basin and approved by other member States. The project should then be submitted to the funding agencies on behalf of the member States by the Organization, as a project of the Basin.

As we are well aware, this type of mutual solidarity between the state constitutes a considerable political force viz-a-viz decisions on financing. The freedom of navigation that would result from the adoption of the Convention on the River, and the initial decisions that the States would take to construct common structures will help create a new framework which will greatly facilitate socio-economic development of the basin.

(2) Railways and roads

The big openning projects currently under way are outlined in chapter 3.5.4. It is up to the riparian states to decide on the order of priority of these projects as far as opening up of the basin is concerned.

The following projects may be considered as priority :

Railways: Rehabilitation of the Benguela railway with regional financing and organization of an international system for the protection of this railway, with the assistance of the United Nations and the participation of the countries directly concerned (Zambia, Zaire, Angola)

- Engineering studies and search of regional financing for the Kassama-M'Pulungu rail link over the Tanganyika. This opening up route is entirely within the Basin.
- Feasibility study on the possible electrification of the Kinshasa-Matadi-Banana and Brazzaville - Pointe Noire railways
- Engineering study and search for regional financing for the Mungbere-Pakwack rail link. This project should include a study on the possibility of broadening the Mungbere - Bando railway from 0.6 m to 1.07 m;
- Search of regional financing for purchase of ferry-boats to improve the Kalemi-Kigoma link;
- If possible, engineering studies and search of regional financing for the construction of the Bujumbura-Uvinza rail link to improve the opening up of Burundi.

Roads: A bridge over the River, Brassa-Kinshasa-Luanda and Ousso-Bangui road link. The road connects the capitals of 4 riparian states and is almost entirely within the basin.

4.4 Energy and Industry

4.4.1 Energy

The general development programme proposed in chap. 4.2 includes the construction of artificial flow controls for the production of hydroelectricity.

The power from these structures would be used by the joint owners of the structure in accordance with their requirements and depending on whether it is economical, in terms of distance, to transport the power.

This will strengthen co-operation in the field of energy. With the systematic development of the basin in general, the number of hydroelectric sites will increase and the network of power transportation lines will increase accordingly.

The Organization of the Basin should therefore be entrusted with the task of undertaking a systematic survey of hydroelectric power sites, and finding ways of optimizing the effects upstream and downstream of the structures for irrigation and navigation purposes in a balanced way.

After updating this survey of hydroelectric power resources, the Organization should relate the hydroelectric capacity to other known resources and to the development priorities of the neighbouring states, particularly to mines and industries and draw up a plan for establishing the necessary links.

These studies should be closely linked to those on navigable waterways (chap. 4.2.1) and should lead to the elaboration of a general long term development plan which defines for the riparian states, ways and means of developing their water resources and improving the exploitation of their common resources.

4.4.2 Industries

It would be extremely profitable to all the riparian states to utilize the large capacity of available hydroelectric power namely:

- the current surplus power of 1,222 MW at Inga;
- the current surplus power of 200 MW at Zambia.

These two available sources of energy have the advantage of being already interconnected over a distance of more than 2,000 km.

The power available at Inga could be profitable to Central Africa (ECCAS) in the promotion of its basic industries, without which economic development of the countries would be slow and would depend on external influence. Similarly the power available at Zambia (which is interconnected with Zimbabwe) could help eastern and southern Africa (PTA) in the same way.

The power links which already exists between the two subregions is more than symbolic. It provides a very solid basis for inter-subregional economic relations, in terms of a systematic exploitation of the complementarity between them, for the benefit of all the countries of the subregion. It also promotes rapid localization of the production of capital goods and inter-industrial and inter-subregional exchanges.

- The PTA has already started studies on regional industries;
- Zaire has already executed the first three phases of the Inga free zone and is seeking to construct the port, railway and road infrastructures etc. which are indispensable to the establishment of large scale basic industries (Banana).
- The Organization of the Basin would have to serve as the body for co-operation and a forum for the study and promotion of industries common to several states of the Basin (and to neighbouring states), starting with the sectors of production which are indispensable to the economic development of the states.

(1) Iron and steel industry

The countries in the Inga area could collaborate to study and establish a joint iron and steel industry, a sort of semi-public company in which all the countries would be shareholders and enjoy favourable terms. Such an industry would give these countries high quality steel at reasonable and stable prices, which is a very important factor for development.

The power at Inga is very cheap. Rich iron ore is available in several states and some technologies allow for the use of reducing agents such as charcoal, which can be produced in industrial quantities without exceeding the capicity for natural regeneration of the forest reserves of the Basin.

A study undertaken by the Republic of Zaire in 1964 entitled "Etude du développement integré de la Zone d'influence du complexe hydroélectrique d'Inga SICAI" recommended a 144,000 tons /year electric powered iron and steel plant, consuming between 398 to 438 Gwh/year, with an average demand of 60 mw The ore deposits envisaged were those of Angola (Cassinga or Cuima), Liberia (Boni Hill) and Zaire (Luebo or Mt. Tuia). The Zairian authorities are counting on using the ore deposits at Itabirite in the Upper Uele (Mt. Tina and others).

- The sites studied are Kimpopo on the Malebo Pool where local ore from Mt. Tina would be processed and Banana where imported ore from neighbouring countries would be processed.
- Taking the cost of one Kwh at Inga to be 4.5 thousandth of a dollar, the cost price in 1964 was between $44.35 and $40.55, depending on the location of the industry and origin of the iron ore. Establishment of the plant at the Kimpopo with ore from Mt. Tina (Uele) would cost a minimum of $40.55 per ton.

- The technology chosen involves the use of electric reduction ovens (two ovens of 33,000 KVA each) followed by conversion of the cast iron into steel by blasting it with oxygen (LD process) and putting it through a continuous casting process.

In this type of industry, a liquification unit is attached to the iron and steel works for distillation of air to produce large quantities of nitrogen which can be used to manufacture fertilizers. The study, therefore, recommends the construction of a fertilizer plant alongside the iron and steel plant. This would be specially advantageous.

- The study recommends the supply of manganese from Zaire (Kisenge), Angola (Yungo, Adougo and others) or from Gabon (Moanda). With regard to reducers, it is suggested to import half of the required coal and to supply the other half from locally produced charcoal (2,000 ha. of Eucalyptus plantation near the factory). The limestone would be supplied from Lukuga. For a 1,000 kg of cast iron, the iron ore from Mt. Tina produces the minimum volume of billets, while the ore from Carringa yields an average volume and that from Kassai the maximum.

Origin of iron ore	Iron ore (kg)	Manganse ore (kg)	Imported (semi-ore (kg)	Charcoal kg	Limestone (kg)	Power kWh	Production of slag (kg)
Carringa	1,500	20	200	200	240	2,530	250
Mt. Tina	1,430	20	200	200	220	2,515	230
Kassai	1,890	30	200	200	700	2,800	730
Cuima	1,500	20	200	200	300	2,570	320
Bomi Hill	1,460	20	200	200	250	2,535	260

The investment cost of the industry was estimated at $70 billion in 1964 for a production capacity of 70,000 tons/year of round iron and other small sectional irons, 20,000 tons/year of black iron, 40,000 tons/years of galvanized iron and 10,300 tons/year of scrap iron.

This preliminary study could be followed-up by the Organization of the Basin for Angola, Cameroon, Zaire, Congo, the CAR, Rwanda and Burundi. Tanzania and Zambia would continue their participation in the subregional ZEP/PTA iron and steel project.

The scope of the study would thus be extended to the steel market and raw materials of the seven countries. The establishment of a joint iron and steel industry on the river (at Kinpopo for example) would also be of greater economic value because the commodities of the countries concerned could be transported by the waterway. The commodities concerned are:

- Zairian iron ore from the Uele (see development of the Upper Oubangui);
- Limestone from the Oubangui in the Central African Republic (Bobossa);
- Charcoal from all the forest regions of the countries served by the waterways (5 countries);
- Power from Inga, with the possibility in the future of supplying power for other multi-purpose developments in the Basin.

Finally, adaptation of the capacity of this factory to the markets of the seven countries, would allow for considerable economies of scale which will reduce production cost to the greatest benefit of all the countries concerned with this project.

Some coastal countries which do not border the River could also join the project (Gabon, Equatorial Guinea, Sao Tome and Principe), especially countries which have some raw materials which can be used in the iron and steel industry and those which can obtain the iron and steel products at a price cheaper than those imported from the external world market.

In conclusion, the riparian states of the River should agree to immediately launch a feasibility study on this industry on the proposed larger basis.

(2) Fertilizer

Self-sufficiency in food without destroying the soil potential should be the real prime objective of all our governments. Valorizing the products of African farmers is one of the best ways of achieving self-sufficiency in food and of increasing incomes of the rural population.

So long as a country does not produce the agricultural inputs required for its food production locally and cheaply it cannot achieve food self-sufficiency without destroying its soils and whatever self-sufficiency is achieved will be temporal.

The riparian states should, on the basis of existing energy resources, jointly study and establish a nitrate and phosphate fertilizer industry, on a big enough scale for production costs to be low and be capable of meeting the real needs of their rural populations.

Such an industrial complex using local raw materials and power from Inga would have a very big impact on agricultural production in all the countries where these fertilizers could be economically transported, such as to countries bordering the main waterway and those bordering the Atlantic.

The processing of phosphate in the electric oven to produce phosphoric acid and superphosphates, the fixation of nitrogen from the air to produce nitrate fertilizer, the combination of nitrate and phosphate fertilizer are all industries which mainly consume electricity, energy from the air, gas, petrol or coal, water, phosphate, potassium, all of which exist in the countries of the region.

The Organization of the Basin should study such possibilities and initiate discussion among the countries, with a view to reaching a common agreement to establish such a chemical complex.

As has been seen, the joint iron and steel industry would provide by-products which are particularly important for a nitrate fertilizer industry (nitrogen, gas from pyrolysis of wood, gas from electric reduction ovens and CO_2 from LD converters from the lime ovens).

The study undertaken in Zaire in 1964 by SICAI proposes the production of ammonium nitrate from atmospheric nitrogen and hydrogen through the electrolysis of potassium solution.

The catalytic combination of nitrogen and hydrogen at high temperature under high pressure produces ammonia (NH3). Part of this gas is burnt to produce nitrogen oxides (NO, NO2) which give nitrogen peroxide (NO3) under catalytic action. When combined with water, this gives nitric acid (HNO3). The other part of the gaz is combined with nitric acid to give ammonium nitrate (NH_4NO_3) which is a fertilizer as well as an explosive. To stabilize the explosive qualities and the inconveniences related to the hygroscopic nature of the product, the ammonium nitrate is mixed with crushed limestone powder. The mixture is granulated, dried and put into plastic bags; this prevents it from absorbing moisture before use.

The proposed unit would have a production capacity of 375 tons of ammonium nitrate per day with 20.5 per cent N. and consume 60 MW/8,000 hours/ year of which 45 MW would be used for the production of hydrogen by electrolysis of potassium solution. Its investment cost was estimated at $29 million in 1964.

Zambia already has a nitrate fertilizer industry and ZEP/PTA is currently studying the possibility of subregional industries.

The Organization of the Basin should undertake a wider scope feasibility study which takes into account the capacities of existing industries, the raw materials available in the states (phosphates, potassium carbonate), the capacities of existing markets and the potential needs that could be profitably met by a joint industry. Such an industry should be strategically located in relation to the communications infrastructure. The study should take into account the possibilities for trade in semi-product from among the industries and within the subregion, with a view to meeting the demands of participating countries at the lowest price.

With respect to fertilizers, for example, the subregional industries could produce concentrated acids or other semi-finished products such as HNO3, H3PO4, MAP, DAP, phosphorus, which the countries would import to process their natural minerals. The objective of the study should be:

- to enable each country carry out individual industrial and mining activities in its own territory;
- to cut down the transport component to a minimum for all countries (fertilizers being weighty products);
- to bring down the selling price of fertilizer to the lowest price possible in each country.

The Organization of the Basin should carry out this study in an intersubregional context and in close collaboration with the governments of member States.

There are several other interesting areas in the field of energy and industry for co-operation among the states in the basin, such as:

- mining of gas from Lake Kivu;
- production of hydrocarbons from the enormous oil shale reserves in the Lomani and Lualaba valleys;

A system of schist pyrolysis by electricity in conjunction with recovery of the maximum heat for pre-heating should be studied.

- Each joint waterway or hydroelectric power development project should be accompanied by a plan to use hydroelectricity from the waterway concerned and local raw materials and be geared towards meeting the needs of several states.

4.5 Self-sufficiency in food

The preceeding chapter dealt with the main agricultural inputs of which water is the most important.

- The Organization of the Basin should take stock of current irrigation projects in the countries, the potential for irrigation in the Basin, select the most advantageous projects for the countries, undertake feasibility studies and look for regional financing for a development programme in one area in each country.

- The Organization of the Basin should also identify African and foreign experience which would be suitable in the various contexts of the basin and assist the countries to carry them out locally.

This can be an excellent framework for exchange of knowledge and experience among the riparian states and serve as the basis for mutual use of the technical skills of the riparian states.

- The Organization of the Basin should also strengthen the network of hydro-meteorological observation, storage and systematic synthesis of data, for the service of the riparian states and monitor climatic changes for protection of the ecology.
- Continental fishing and breeding of trypanotolerant animals (in conjunction particularly with animal draught) are areas where the Organization can play a leading role, simply by organizing the transfer of technologies already mastered in other parts of Africa and the world; not only at the level of engineers, but also through peasants who have mastered these techniques in their own countries.

The main objective of the Organization should be to assist the countries in the basin to achieve food self-sufficiency through the control of their water resources, development of energy, opening up of the Basin and promotion of joint industries for the production of agricultural inputs.

4.6 Environment

One of the general tasks of the Organization would be to keep a close watch on the environment so as to be able to sound the alarm in the event of any adverse development and to propose solutions before it is too late.

It should especially monitor the natural factors whose deterioration can negatively affect the regime of the water resources in the basin, pollution, (present problem of the water hyacinth) excessive exploitation of forests etc. and provide a forum for discussion among the riparian states with a view to take concerted effort and promote co-operation.

As an international body, the Organization can and should benefit from the assistance and experience of United Nations specialized agencies in this area. (The United Nations Environmental Programme).

The Organization of the Basin should start off by mapping out the entire forest area, to identify the actual state of the basin; it should strengthen national networks of hydrometeorological stations for monitoring climatic changes and systematically use satellite pictures to monitor changes in the forest and in the humidity.

It should draw up and submit to the riparian states regional rehabilitation projects in the sensitive upper basins or in the areas where conditions are deteriorating.

4.7 General functions

The Organization of the Basin should play the role of a data bank for the riparian states. It should therefore collect all existing data, wherever they are, put them in a form which can be processed, determine the areas where data is lacking and undertake studies and researches to make up for the lack of data in these areas, particularly in the field of:

- hydrology;
- geology, hydrogeology, mines;
- topography, general cartography and specific topography of waterways; sites, irrigable sites, floodable areas etc.;
- pedology - systematic cartography followed by soil changes etc.;
- energy - systematic survey of sites and existing structures (see chapter 4.1) and other forms of energy;
- navigable waterways (see chap. 4.3);
- systematic synthesis of data for progressive elaboration of a general development plan of the Basin and in any other area in accordance with the needs expressed by the member States for co-operation.

It is by organizing itself as a serious technical research and promotion bureau, and by accumulating relevant and accurate data that the Organization of the Basin would be able to tackle the tasks ahead and efficiently serve the riparian states at the individual and collective levels.

4.8 Conclusion

The proposals made in this report regarding the possibilities of jointly developing and exploiting the basin of the River are those that seemed the most interesting for the riparian states. This is neither a comprehensive list of possibilities (the volume of available data not permitting) nor a detailed short listing.

Governments of the riparian states should, during their first meeting, analyze and discard some of these proposals and make counter proposals in accordance with their interests.

The proposals made can be classified into three groups:

(1) Specific joint projects for which the countries have already expressed interest in the past, through their actions, and on which feasibility studies should be undertaken immediately.

In this connection, mention can be made of the following:

(a) The general development of the Ubangui beginning with expansion of the Mobaye project to make it a multi-purpose regional project;

(b) Development of the Sangha, beginning with prospection of reservoir sites on the upper Sangha;

(c) Stabilization of the levels of Lake Tanganyika, beginning with a study on the development of the Lukuga from the lake upto the confluence with the the Lualaba, with a view to its calibration for various specific discharges and a study of the possibilities and cost of adapting lake ports to different tidal levels;

(d) Feasibility study on the use of the power produced at Inga and local raw materials for production of steel and fertilizer in industries jointly owned by several states;

e It is proposed that the riparian states draw up priority projects which the Organization of the Basin should help promote, including projects of the Transport Decade.

(2) Background studies: Pre-feasibility studies should be carried out on all projects, including those cited in this report. The riparian states will jointly decide the order of priority that should be accorded the various draft studies.

As regards the projects directly related to the river network, it seems judicious to give priority to the following:

1. Undertaking a study for the development of the Ubundu-Kisangani reach,
2. (a) within the framework of the possibilities for power, mining and industrial development in the Kisangani area;
   (b) in comparison with the proposed Ubangu-Kindu rail link planned under the Transport Decade.

2. Undertaking a study for the development of the upper section of the River by regulating its discharge upstream (Luapula, Mweru, Luvua). This study could well be undertaken in conjuction with the preliminary study on an artificial canal to drain Lake Tanganyika through the Bay of Kassaba pass, as a possible complement to drainage through the Lukuga.

3. Setting up of the vital technical institutions
   (a) Establishment of the secretariat of the Organization of the Basin;
   (b) Establishment of a reliable environmental control system;
   (c) Undertaking or continuing the systematic survey of natural resources (hydro-power, energy, geology, irrigation, forests, fishing etc.)

4. Actions to be taken

   These can be broken down into three categories:

   (a) Political: The political will to co-operate with neighbouring states, to take unanimous political decisions to collectively solve various problems, to accept a common approach to the exploitation of resources.

   (b) Legal: Negotiation and signing of an agreement which affirms the will to maintain and develop peaceful relations and co-operation with neighbouring states, and application of generally accepted rules of international law to resolve problems related to the exploitation of shared resources and to settle disputes which may arise among states.

c. Technical: pooling of human and material resources under a joint organization, will be undertaken with each State having a relative autonomy within its territory. The organization will be responsible for implementing the agreement and studying definitive ways and means of carrying out, in a practical and profitable manner, the decisions taken by the authorities of the countries.

It should be emphasized that each of these three areas could serve as a starting point which would be consistently enriched with new ideas as time goes on and in accordance with the development of co-operation among the members of the Organization. The Organization should therefore be established on sound bases and a practical work programme, useful for the States should be drawn up right at the beginning. Each year, the governments of the riparian States could clarify or broaden the scope of the political, legal and technical framework of the Organization in relation to its laid down objectives and the success of preceding stages.

5.1 Basic legal instruments

As seen in chapter 3.2, the River and its tributaries have been international since 1886, under agreements concluded by the colonial powers. These agreements are still in force.

These former laws figure in the annexes. Their analysis has shown that it is time that they are be updated, in accordance with the evolving importance of natural resources in the current context of national sovereignty and after almost a century of world changes. Reading through the old laws will be enough to convince the nine governments of the riparian states of the need to discuss and approve a new international convention on the status of the River, sort of mechanism for effective intra-African co-operation, solidarity and mutual guarantee capable of enhancing their individual national development efforts and attracting rational investments for the development of the immense resources of the Basin.

This is why the present study has incorporated the search for and study of old laws, the analysis of the international conventions on several big rivers in the world and has prepared a detailed draft international Convention on the River (see annex).

The draft convention comprises a preamble and 34 articles. Due to the political, historical and economic importance of the draft convention, it is proposed that the Heads of State and Government sign it. The last paragraph of the preamble restates some specific expressions used in the Monrovia Declaration and in the Lagos Plan of Action and Final Act of Lagos.

Title 1 deals with definitions, Article 1 attempts to outline the problem relating to the name of the River, by endorsing the "modus vivendi" adopted by three of the countries bordering the River. An alternative solution is proposed in the annex in a draft convention on the international toponymy of the River and its main tributaries.

Title 2 abrogates the former laws on the River, as far as the states which approve the new Convention are concerned. If some countries do not see the immediate need for enforcing the new Convention, the former laws will continue to apply to the portion of the basin within their territory.

Under Title III the states proclaim the River "International River" (network), solemnly undertake to co-operate with each other in the development of the resources of the Basin (territory), agree on freedom of navigation and equal treatment on the hydrological network and decide to exploit the River and its tributaries in accordance with the terms defined in the convention.

Under title IV, the states make individual commitment not to modify the natural regime of the waterway without prior consent and approval of the other states. This mutual commitment is the foundation of all statutes on drainage basins shared by several countries. It reinforces the principle of mutual limitation of one's liberty, for the sake of the rights of others. Article II specifies the general conditions for constructing the structures which have either negative or positive repercussions for several countries.

Title V further develops the general conditions for implementing the principle of freedom of navigation stipulated in article 10. In article II, it opens the way for neighbouring non riparian states (especially Chad) and in article 12 announces a joint inland water transport regulation. The states, undertake in article 14 to at least maintain the current level of navigability of the waterways in their respective territories and to develop the waterways within the scope of joint programming. This does not mean that an individual state cannot undertake improvement works on the waterways in its territory, but rather that a general plan will be drawn up and approved by the states, so as to maximize the economic benefits of the efforts of each state through efficient co-ordination of all the efforts. The establishment of a joint programme could also facilitate the search by all concerned for the technical and financial resources necessary for

executing projects. It could also afford collective guarantee for loans, allow for integration of bids for tender and actual works, their joint control and the joint exploitation of structures.

Each state will negotiate or decide on its participation in each specific activity or project.

Article 15 specifies the conditions for applying the principle of equal treatment to national carriers of the riparian states. Article 16 affirms the application of the principles of freedom of navigation and equal treatment to the crossing of structures which make it possible to cross unnavigable reaches of waterways.

Article 17 stipulates that public safety, activities, policing and health control of waterways are the responsibility of the individual states; and calls for facilitating the movement of ships and goods. Article 18 deals with the safety and control of navigation within the national territory and mentions the preparation of a joint regulation aimed first at harmonizing and secondly integrating the navigation control and safety system. Provisions for the floating of timber are mentioned in article 19.

In view of the general deterioration in the climate and vegetation on the African continent, it was thought that it would be useful to undertake joint supervision of the factors concerned and legally open the way for co-operation in conservation namely protection of the environment, joint exploitation of renewable resources and in integrated action as necessary. This is the subject of the 4 articles under Title VI.

This proposal is justified by the deterioration observed in the river network of the Sangha, the Oubangui and the River itself, due to the desertification of the Sahel and the disastrous consequences of severe deforestation in the forest countries.

The idea of dividing the water resources is the subject of Title VII. Since the basin has an abundant surplus of water, it is probable that the question of dividing the waters of the basin will not arise among the countries. It would still be good however, if the status of the River will be defined in as detailed form as possible since the neighbouring states may one day raise specific issues relating to division of water resources. The legal international framework that the States agree to adopt should therefore be specified in the Convention.

Application of the convention calls for the setting up of a common body mentioned under Title VIII.

Title IX relates to ratification (Article 29), entry into force and participation (Art.30), revision (Art.31) denunciation (Art.32), settling differences (Art.33) and registration of the convention. This draft Convention is based on others drawn up for rivers in Africa and in other continents.

5.2 General development policy

At the time of establishing the joint Organization, it is essential that the states agree on a minimum work programme which the Organization will be responsible for studying and carrying out.

Chapter 4 gives specific examples of what the states can undertake collectively.

The representatives of the government would have to decide together on these issues issues during their meeting. It would be desirable for each state to define its development priorities in its section of the basin so that the first programme of Action of the future Organization could be drawn up taking into account as many national priorities as possible, in addition to big subregional projects planned.

It is only after this meeting that the guidelines of a general development policy can be defined.

In the meantime, only basic general proposals can be made:

"The general policy for the development of the River, its tributaries, its sub-tributaries, lakes, embranchments and outlets will be directed at the stage of integrated development of the river network by giving priority to:

- regional projects of economic benefit to several countries;
- multi-purpose developments with significant effects on irrigation, navigation and production of energy;
- projects which help to further open up the basin or minimize the food shortage ;
- establishment of joint industries to meet the basic needs of the peoples in the basin and to promote the local production of economic development inputs.

In the application of this general policy, the riparian states would agree, as a matter of priority, to jointly promote the following activities:

- Development of the Upper Oubangui for all-year round navigation and energy production;
- Development of the Sangha for navigation and energy production;
- improvement of the Lukuga, with a view to stabilizing the levels of Lake Tanganyika;
- Construction of railway feeder links from Kassawa to M'Pulungu and from Uvunga to Bujumbura, and studies on the Mungbere-Pakwack rail link;
- Feasibility study on a regional iron and steel and fertilizer industries to operate on power obtained from Inga and local raw materials from the states, with a view to establishing joint inter-state companies capable of producing cheaper, high quality goods for several riparian states.
- Systematic studies on all the waterways in the basin, for the purpose of:
  - strengthening the network of hydrographic measurements and topographical information;
  - taking stock of all hydroelectric power sites and their effects upstream and downstream of their structures;
  - drawing up a programme for the development of the navigable waterways;
  - systematically assessing the irrigation and soil potential in the basin with a view to drawing up a regional priority programme, by country, for food sufficiency in the basin;
  - preparing a synthesis of all the geological and hydrogeological data as well as data on mineral resources in the basin and continuation of the systematic charting of the basin, while giving priority to the basic needs of the states, particularly to those that are least developed in this respect;
  - establishing a data bank on the basin, to collect and summarize all present and future information, for use by member states.

5.2.1 Joint institutions

As seen from the analysis of former international laws and in the draft Convention on the River, the sovereign states are parties to the agreement. The undertaking in no way involves relinquishing national sovereignty.

The joint institutions responsible for implementing the collective commitments made by the States shall therefore comprise, at each level of authority, representatives of existing national institutions; decisions can only be taken on the unanimous agreement of member States.

5.2.2 Joint decision-making and control institutions

The basin of the River is vast, with abundant resources and the political power structures of the riparian States are generally centralized. This is why it is suggested that the representative body of the joint institutions should be at the level of the Heads of the Republics.

The Conference of Heads of State and Government shall be the highest authority. It shall define the general orientation, take the most important decisions, settle disagreements which may arise among lower levels of authority, provide the high-level political backing needed for promoting big projects among friendly nations and international funding agencies and maintain the spirit of solidarity among member States.

It is proposed that the Conference of Heads of State and Government automatically meet every two (or three) years - extraordinary sessions can however be convened as and when necessary. It is suggested that the Heads of riparian states chair the Conference by rotating alphabetically, for the period between two ordinary sessions.

5.2.3 Council of Ministers

The main permanent planning and control body under the Conference of Heads of State and Government will comprise one Minister from each member State.

Its functions will be as follows:

- Definition of the policy for the development of the River and its tributaries, exploitation of the resources of the basin and promotion of co-operation among the member States;

- Approval of joint priority programmes and formulation of modalities for financing and implementing them and for covering expenditure on staff and operating costs, as well as methods of operation and modalities for carrying out all joint activities for enforcement of the statuts on the River;
- Representation of the States vis-a-vis Governments of foreign countries and technical co-operation, economic and financial bodies and representation of the Basin vis-a-vis the States. Decisions taken by the Council of Ministers pursuant to directives of the Conference of Heads of State should be compulsorily applied in member States. The Council would approve the operating and working budget, financial agreements and various other regulations;
- Monitoring of implementation of decisions taken by the Conference and by the Council it would have sanction power vis-a-vis the executing bodies.

The chairmanship of the Council of Ministers shall rotate and shall be for the same period of time as for the Conference of Heads of State. The Chairman of the Council of Ministers shall not be of the same nationality as the incumbent chairman of the Conference of Heads of State and Government. States should nominate the Minister whose department covers most of the sectors related to development of the basin of which the main ones are hydraulics, inland water transport, hydroelectric power and natural resources in general.

5.2.4 Joint planning and implementing institution

A permanent executing body should be set up under the authority of the Council of Ministers and its chairman, to implement the rules and decisions taken by the superior authorities. This executing body could be called General Secretariat or Executive Secretariat or High Commission of the Basin. The body will be headed by a high-ranking official with a long, practical experience in the design of big projects and management of their implementation, as well as experience in public management, international relations and regulations.

The Secretary-General or High Commissioner would be appointed by the Heads of State and Government, as the proposal of the Council of Ministers and he would manage the executing body.

The executing body will be lightly staffed initially and will be authorized to depend on the technical services of member States. It will be strengthened only in accordance with specific activities that it could launch.

The following general organization chart is proposed:

Conference of Heads of State and Government (Chairman of the Conference)

Council of Ministers (Chairman of the Council of Ministers

General Secretariat (Secretary-General)

Technical Department
- Data bank
- General Planning Department
- Studies and works control
- Analysis of national projects
- Management of Co-management of specific projects

Administrative and Financial Department
- Accounting, budgets
- Personnel management
- Management of financing agreements

The Organization as a whole could be called The International Authority for the Development of the Basin of the River (R.B.A.) (L'Autorité internationale pour L'Aménagement du Bassin du Fleuve (A.B.F.).

The States may decide to establish other departments in accordance with the decisions they might take regarding co-operation and integration of their activities. For example, they could pool their maintenance, buoyage and improvement works on the River - Ubangui and River - Sangha inter-State links, by teaming up with the existing department, the SCEVN, which already belongs to two countries. Cameroon and Zaire should join this department. At the operational level, this will change the work programme of the SCEVN only slightly; it will also have to cater for the Upper Sangha (N'Goko) and the Mobenzele-Malouko reaches which are normally maintained and developed by Cameroon and Zaire respectively.

The SCEVN will therefore become the inter-State navigable waterways department of the joint organization, thus equipping the Basin Authority with considerable human and material resources right from the beginning.

The various studies and development projects proposed in chapter 4 will be conducted within the various departments and autonomously managed under specific budgets.

The draft complete organization chart is attached as an annex to this chapter.

5.2.5 Integrated executing establishments

(a) The states can for example, decide to pool transport on certain rivers. The joint company which would thus be created would be a separate entity with civil responsibility and would be financially autonomous. It would be related to the River Basin Authority through the Secretary General (Chairman of the governing council) and through the Council of Ministers (Approval of the balance sheet, operating statement, final discharge, loans, tariffs);

(b) If the states decide to study and to carry out certain development projects of common interest, the Authority will be responsible for undertaking the feasibility studies, probably with external assistance. What is being proposed is a project to manage the human, material and financial outlay, in a relatively autonomous manner. The Authority will see to it that the project is implemented efficiently. In addition to undertaking studies, the project could also supervise works and manage joint structures after construction;

(c) Taking examples from the list of joint projects proposed in chapter 4, it is suggested to work towards efficiency and economy in the following way:

(1) To interest, in the various selected projects, co-operation bodies such as the United Nations system, the European Economic Community and for historical reasons, France and Belgium, whose research firms and state organizations have considerable volumes of documented data.

(2) The Authority should assign the following projects to existing and operational institutions.

- The study on development of the Tanganyika through the Lukuga could be assigned to the "Autorité du Bassin a la Régie des voies fluviales" of Zaire, on terms to be determined;
- The study on the improvement of Upper Ubangui and Upper Sangha could be entrusted to the SCEVH, whether it is extended to Cameroon and Zaire or not and on terms to be determined.

- The feasibility study on the Kassam-N'Pulungu railway could be entrusted to Tazara of Zambia, that on the Urinza-Bujumbura link to the Tanzanian Railway Authority and that on the Mungbere - Pakwack railway to the Zairian Railway Corporation;

- The periodic study on the waterways of the Basin (inventory of hydro-power sites and development of waterways) could be carried out directly by the Technical department of the Authority, likewise other general surveys on irrigation possibilities, the establishment of a system for control and synthesis of environmental data, and survey geological, hydrogeological and mining possibilities. Also, the establishment of a data bank and the systematic search for more information could be undertaken directly by the Technical Department.

5.2.6 Operating budget

This study, can at the present stage, only evaluate the operating budget of the Authority, on the basis of the minimum organization proposed and subject to decisions of co-operation that the states would like to take.

It is assumed that the Conference of Heads of State and Government will not have any specific budget. The state which hosts the meeting of the Conference will cover all costs involved.

Similarly, except between sessions, the travel costs of the Chairman of the Council of Ministers will be borne from the budget of the Authority, when he undertakes missions on behalf of the Authority.

The budget of the Authority is estimated as follows:

			CFA F	US$
1.	Salaries			
1.1	Secretary General	:CFA F 750,000/month/x 12 months	9,000,000	21,428.57
1.2	Technical Director	:CFA F 600,000/month/x 12 months	7,200,000	17,142.86
1.3	Administrative and Financial Director	:CFA F 600,000/month/x 12 months	7,200,000	17,142.86
1.4	Documentalist	:CFA F 450,000/month/x 12 months	5,400,000	12,857.14
1.5	Civil Engineer	:CFA F 450,000/month/x 12 months	5,400,000	12,857.14
1.6	Hydraulic Engineer/hydrologist	:CFA F 450,000/month/x 12 months	5,400,000	12,857.14
1.7	Environmental agronomist	:CFA F 450,000/month/x 12 months	5,400,000	12,857.14
1.8	Geologist/Engineer for mines and mineral industries	:CFA F 450,000/month/x 12 months	5,400,000	12,857.14
1.9	Five junior engineers or specialists	:5 x CFA F 350,000/month/x 12 months	21,000,000	50,000.00
2.0	Two qualified accountants	:2 x CFA F 350,000/month/x 12 months	8,400,000	20,000.00
2.1	Secretary to the Secretary General's department	:CFA F 250,000/month/x 12 months	3,000,000	7,142.86
2.2	Two secretaries for the Technical Department and the Administrative and Financial Department	: 2 x CFA F 200,000/month/x 12 months	4,800,000	11,428.57
2.3	Three qualified typists	:3 x CFA F 150,000/month/x 12 months	5,400,000	12,857.14
2.4	Driver for Secretary General	:CFA F 100,000/month/x12 months	1,200,000	2,857.14
2.5	Three drivers for Technical Department	:3xCFA F 80,000/month/x 12 months	2,800,000	6,857.14
2.6	Driver for Administrative and Financial Department	:CFA F 80,000/month/x 12 months	960,000	2,285.71
2.7	Three auxilliary staff	: 3 x CFA F 60,000/month/x12 months	2,160,000	5,142.86
		Sub-total	100,000,000	238,571.43

		CFA F	US$
2.	Benefits and allowances : 20 per cent of total salaries:		
	Sub-total	20,400,000	48,571.43
3.	Overheads		
3.1	Rent for 20 offices - CFA F 700,000/month/x 12 :	8,400,000	20,000.00
3.2	Water, electricity, telephone. telex, maintenance -		
	CFA F 1,000.000/month/x 12 :	12,000,000	28,571.43
	Sub-total:	20,400,000	48,571.43
4.	Supplies costs		
4.1	Fuel, lubricants, maintenance, insurance, repairs:		
	5 vehicles x CFA F 250,000/month/x 12 :	15,000,000	35,714.29
4.2	Office supplies - CFA F 100,000/month/x 12	12,000,000	28,571.43
	Sub-total	27,000,000	64,285.71
5.	Travel costs		
	- missions within the countries 8 senior officials x 60 days/year x 50 on the average :	10,080,000	24,000.00
	- Missions to the interior - 2 officials x 90 days/year x $50	3,780,000	9,000.00
	- Secretary General and/or Chairman 2 x 90 days/year x $100 :	7,560,000	18,000.00
	Sub-total:	21,420,000	51,000.00
6.	Capital expenditure		
	- Office furniture - 20 offices x CFA F 600,000 on the average :	12,000,000	28 571 .43
	- Office machines		
	5 typewriters 2 photocopiers 1 telex, 2 cyclostyling machines, etc. :	15,000,000	35,714.29

	CFA F	US$
- technical equipment for the planning department: drawing tables, calculators, plan printers, integrating pantograph machines, maps, aerial photographs, satellite pictures, binoculars, etc. :	12,600,000	30,000.00
- Technical field equipment, rubber dinghies, motors, echo sounders, current meters, tents, camp beds, etc.	12,600,000	30,000.00
- Vehicles		
1 car for Secretary General, 1 vehicle for the Liaison Office, 3 jeeps - 5 x $18,000 :	25,200,000	60,000.00
Sub-total:	77,400,000	184,285.7?
7. Sum total		
- Salaries	100,200,000	238,571.43
- Allowances	20,400,000	48,571.43
- Overheads	20,400,000	48,571.43
- Supplies costs	27,000,000	64,285.70
- Travel costs	21,420,000	51,000.00
- Capital expenditure	77,400,000	184,285.70
Grand total 1/	266,820,000	635,286.00

1/ US$1 = CFA F 420

Of this amount, capital expenditure accounts for 29 per cent or a real operating budget of CFA F 189.4 million or $US451,000.

It should be noted that the salaries indicated are much lower than those of international organizations, rather close to salaries paid by intra-African organizations.

Considering the economic situation of African countries, and the need to avoid any extra heavy costs at the beginning, and in order to attain technical efficiency, it is proposed to mobilize the funds for this first budget as follows:

1. The Authority will be located in one of the riparian states, which will be required to provide adequate premises for it;
2. As indicated earlier, one of the duties to be undertaken immediately by the Organization will be the establishment of a data bank.

Various types of data are available in the riparian states, in France and in Belgium in particular. Getting access to them, and then analysing, processing, classifying and documenting them is a major work which will be both expensive and time consuming. It is therefore proposed to seek the assistance of the United Nations, France and Belgium to launch a project on the establishment of a data bank for the basin. This would naturally lead to the establishment of a documentation and archives centre, equipped with modern facilities for processing available data and any additional data in the future.

In this regard, the budget item 1.4 would be incorporated in this project. This means that on establishment of the documentation centre of the Authority, an internationally recruited staff will be appointed Chief of the centre; he will be assisted by a young African engineer or senior documentalist(included under code 1.9).

3. Similarly, financing should be actively sought for the proposed collection of environmental data, the establishment of a permanent observation system and determination of a priority action programme for conservation, rehabilitation, and exploitation discussion in chapter 4.6, in order to evaluate the current situation, which is worsening, and to recommend comprehensive solutions to the states.

The Agronomist/Environmentalist suggested under budget item 1.9 will be the director for this project. He will be recruited and paid on international or bilateral basis and will be assisted by a young junior African engineer or a senior technician who will take over when the monitoring system will have been well established and operating smoothly.

4. The same operational approach should be adopted for:
   - the proposed survey of geological, hydrogeological and mining prospects and the systematic cartography and inventory of mining possibilities to be conducted by an internationally recruited engineer (under budget item 1.8) with the assistance of a junior staff with the qualifications specified under item 1.9;
   - the proposed periodic study on the waterways of the basin - improvement of the river network, survey of hydro-power potential and possible development of waterways, to be directed by the staff indicated under items 1.5 and 1.6.

5. Also, part of the capital expenditure planned under item 6, relating particularly to technical and field equipment could be covered by project funds. Local contributions towards projects would on the other hand, be provided either by the Organization or by the States. In either case, special budget lines separate from the operating budget of the Authority would be opened. Whatever budget is drawn up should be revised, at the time of drafting projects, by the external aid and technical services that the Authority would directly involve in their implementation.

To conclude, it is proposed to adopt a budget by recommending to the Secretary-General to go along such lines. Staff recruitment and equipment should be undertaken in accordance with needs, the needs being defined in accordance with the start of concrete operations. The Secretary-General's first task would be to equip the Authority with the minimum staff and facilities, to prepare the terms of reference of studies on projects retained by the Authority (Council of Ministers) and to seek co-operation among international institutions, friendly countries and national technical services for general advancement.

It should therefore be possible, if the states agree, to include in the budget "as a reminder" the five engineer posts under items 1.4 to 1.9 and item 3.1, which would mean a reduction of CFA F 35.4 million ($US84,857), thus giving a total of CFA F 231.42 million or $US551,000.

5.2.5 Distribution of costs

The meeting of plenipotentiaries of the riparian States will discuss distribution of costs and fix quotas for member States:

(1) A specific system of local financing (contribution) will be fixed for each project. For example, the CAR, Zaire and the Congo will have to provide local funding towards the Ubangui development project. Various quotas could be determined for member States after assessment of the potential economic benefits of the project.

For example:

(a) The section of the Ubangui river within Zarian territory in the same length as the sections within both the Congo and the CAR.

(b) To our present knowledge, general opening up is more important than local energy production since the improved waterway will be put to immediate use while the energy can only be developed and used in successive stages. Moreover, all three countries will benefit from improvement of the navigability of the Ubangui while only two countries will benefit from energy. Indefinite variations of such assessment of the project could be made. The above assessment would give the following results:

	Congo	CAR	ZAIRE	TOTAL	%
Co-efficients for navigability	1	1	2	4	66.66
Co-efficients for energy	0/1	1/2	1/3	2/6	33.33/100
Distribution of costs per country	16.66%	33.33%	50%	100%	

2. An indefinite number of solutions, each of them based on a different set of parameters, could also be envisaged for the distribution of the operating budget.

These parameters include area and population of the countries, level of income, area of the basin and population in each country etc. The tables which figure on pages 6 and 11 could be used in this connection.

As an example, and as a basis for negotiation among the countries, we propose a simple formula which also appears to be quite fair.

The distribution of operating costs among the countries could be as follows:

(a) a small fixed coefficient or sovereignty quota;

(b) a quota, proportional to an estimate of existing basin resources in each member State and the current contributory capacity of the states.

This would give the following scale of cost distribution:

	Angola	Burundi	Cameroon	CAR	Congo	Rwanda	Tanzania	Zaire	Zambia
Fixed coefficient	5%	5%	5%	5%	5%	5%	5%	5%	5%
Proportional quota	(5%)	-	5%	5%	15%	-	5%	20%	5%
Total	5%	5%	10%	10%	20%	5%	10%	25%	10%

The People's Republic of Angola which is currently facing repeated military agression from the Republic of South Africa will be exempted from the proportional contribution, for the time being.

When situations become peaceful and reconstruction and economic revival begins, the distribution scale will be revised and the share of Rwanda and Burundi reduced accordingly.

Application of the cost distribution system to the proposed draft budget would result in the following annual commitments of expenditure for each State:

	Angola	Burundi	Cameroon	CAR	Congo	Rwanda	Tanzania	Zaire	Zambia	Total
millions of CFA F	13.341	13.341	26.682	26.682	53.364	13.341	26.682	66.705	26.682	266.82
US $	31,764	31,764	63,529	63,529	127,057	31,764	63,529	138,822	63,529	635286

5.2.6 Conclusion

In pursuance of Title VIII of the draft Convention relating to the status of the River, a draft convention for the establishment of the institutions suggested earlier on has been prepared in accordance with standard international commitments. In this connection, account was taken of the experience of other river basin organizations, particularly those in Africa.

The corresponding text which appears as annex I comprises five titles and thirty articles covering all the legal provisions which the Authority would require for its operations.

The preamble (section one) contains the same provisions as in the draft Convention on the status of the River, plus the actual text of the draft Convention since it is likely to be signed first.

Title II establishes the Authority, gives its name and fixes its location (Article 1). It then defines its functions (Article 2), and outlines the existing institutions.

Title III defines the highest body of the Authority and its general operating regulations.

Title IV defines the other bodies of the Authority and all the necessary functional powers and provisions.

Title V outlines the procedure for membership, for revision (Article 22), for settling disputes (Article 24), for withdrawal (Article 25), for dissolution (Article 26 and 27) and for ratification (Article 28) of the convention.

6.1 General conclusions and recommendations

6.1 General conclusions

The present study, after reviewing the current status of the basin, both at the legal and technical levels, has prepared the following instruments for the riparian States of the River:

- A new draft international convention on the River to replace the old conventions dating back to the beginning of the century;
- A draft convention establishing an inter-state co-operation body, in charge of implementing the international convention on the River and which includes all the provisions necessary for it to operate efficiently;
- A draft budget for the Organization, taking into account the need for economy and efficiency; a system for distribution of operating costs is also provided;

- Some items on which decisions should be made regarding the formulation of a general policy for development of the basin;
- Specific proposals for general development of some parts of the basin, beginning with joint feasibility studies for which general guidelines are defined;
- Suggestions for co-operation in the field of energy and industry, and ways and means of attaining food self sufficiency through a joint irrigation programmes
- A proposal for the establishment of an environment monitoring system, survey of natural resources and possibilities for co-operation, taking into account the serious deterioration currently going on in the regions north and south of the basin.

The approach was to determine as best as possible, the work that this Organization will have to undertake, during the first stage of development and in careful application of the international statute, and then to define a draft operational structure, modest at first, but capable of mobilizing the intra-African, foreign, bilateral and multilateral resources necessary for successive development of the resources of the basin. It is therefore intended for the proposed organization to depend fully on the technical services of the riparian States and on the good will of friendly nations and international aid organizations.

6.2 Recommendations

A. In all the countries visited, the authorities showed a keen interest for the proposed establishment of a joint Organization of the River, on condition that:

(a) the body to be established would not be a costly and ineffective bureaucratic superstructure, but would rather be a modest, operational body which does not create any excessive financial burden for the states;

(b) co-operation would be based on the principle of functional integration, meaning that simple co-ordination should not be followed by integration as a rule, but should be achieved through decision, based on specific economic interest of the parties concerned, project by project and case by case.

B. It is desirable that the international community provides large-scale assistance to the Authority of the Basin on its establishment. This is to say that friendly nations and multilateral co-operation bodies should be associated with the Organization quite early in its operation so as to enable it to execute the first activities that will be decided on by the member States.

It would be specially good, subject to the approval of the riparian states, if the main bilateral and multilateral aid bodies, already active in the basin (particularly France, Belgium and the EEC) as well as some of the institutions of the United Nations system (mainly the UNDP, UNEP, UNTCD and FAO) would be informed of the establishment of the Authority and a meeting held, with a view essentially to determine the contribution that each of them could make to the implementation of the first programme of action which will be drawn up by the riparian states and what human and material support each of them could give to the newly established Authority of the Basin.

Finally, it is recommended that the states send high ranking representatives, with adequate power, to the preparatory meeting, so that the final outcome of the meeting could be transmitted directly to governments, with no risk of any new spectacular change being made during the final inter-state negotiations among the Heads of State.

C. The Economic Commission for Africa has been requested by several riparian states to assist in the establishment of the Organization of the basin. Its role should not end with the execution of the present study and with the submission of this study report to the governments.

ECA, in agreement with the governments should draw up and put into effect a work programme aimed at establishing and ensuring the effective start of the Authority of the Basin, both at the organizational and operational levels. The work programme could be drawn up as follows:

(1) preparation of ECA report — March

(2) submission of report to governments. It is advisable to send the report to governments by two channels:

(a) by diplomatic channel — End of March

ECA could organize a meeting with the Ambassadors of the nine riparian states in Addis Ababa to present the report to them by outlining the general principles and insisting on the need for them to transmit the report to the governments as quickly as possible.

The report will be submitted to the Ambassadors together with a letter of introduction,

(b) by direct channel — End of April

A month after submission of the report to accredited ambassadors in Addis Ababa, ECA should send a mission from the Transport Division to the nine member States.

This mission will have the task of:

- bringing extra copies of the report to the states to be given directly to the relevant technical ministries:
- explaining the proposed establishment of the Authority of the Basin to the states at an inter-ministerial meeting to be presided over by the ministers, most concerned with the project or by the director of his ministerial staff;
- suggesting to the states a date and venue for the planned preparatory meeting (cf Terms of reference) and urging them to be suitably represented: the leader of the delegation should be furnished with full powers and delegates should be adequately qualified technically.
- insisting that an inter-ministerial commission be set up in each country, before the convening of the preparatory meeting, to analyse the project and to explain the government's position to the leader of the national delegation.

3. Preparatory meeting (Experts and high ranking representatives) End of May

This could be held either in the riparian states or at the ECA headquarters. The second venue will provide the facilities for finalizing the project, so that delegations can take the final draft with them to their countries.

Draft background documents for the preparatory meeting have been prepared.

(4) Submission of the final document to governments

- by diplomatic channel only — Mid-June

- ECA should maintain high-level contacts with governments in order to draw up the follow-up programme, particularly to decide on the date and venue on the Conference of the Heads of state and government of the riparian states, to carry out the final negotiations at a ministerial meeting (which will immediately follow the Conference of Heads of state), to arrange official signing of the International Convention on the River, the statute of the Authority, to approve the budget and organization chart, appoint a Secretary-General of the Authority and approve the first programme of Action of the Authority.

In this connection, ECA should invite several international and bilateral organizations and make arrangements, in co-operation with the host country, for organizing the Conference of Heads of state and government and the ministerial meeting. These meetings could be planned to coincide with other intra-African Heads of State meetings (of the OAU, for example), by checking on the dates for such meetings.

D. The procedures for discussion among the states and approval (preparatory meeting, ministerial meeting), signing (Conference of Heads of state and government), subsequent ratification (parliaments of the riparian states) of the new Convention on River and the establishment of the Authority will take quite a long time, similarly preparation of the budget and appointment of staff. It is therefore adviseable that ECA, in co-operation with some institutions of the United Nations system, and with the agreement of the Governments of the riparian states, start immediately to formulate the terms of reference and budgets of feasibility studies for the most urgent activities to be carried out in the basin and to find the necessary funds for them.

The activities concerned will be mainly:

(1) The hydraulic and civil engineering study for stabilizing the levels of Lake Tanganyika (mainly Zambia, Tanzania, Zaire, Rwanda and Burundi), to be undertaken together with the UNDP or the EEC and in co-operation with Belgium;

(2) Prospection of sites for a reservoir on the Upper Ubangui, feasibility study of the best site and drawing up of a programme for general development of the Ubangui for energy production and navigation; this is to be done together with the UNDP and in co-operation with France and Belgium;

(3) Some type of study on the Upper Sangha, to be undertaken jointly with the World Bank and in co-operation with France and the EEC;

(4) Feasibility study, to be undertaken jointly with UNIDO, on a subregional iron and steel industry and a fertilizer factory which will operate on the power produced at Inga and localy obtained raw materials;

(5) Establishment, in co-operation with the UNDP, France and Belgium, of a modern data bank for the basin, for use by all the riparian states;

(6) Establishment, jointly with UNEP, of an environment study and monitoring system for the entire basin;

(7) Subject to the approval of the riparian states, the establishment of a provisional organization which the States would entrust with the responsibility of executing the above-mentioned studies and activities in conformity with the previous laws (old laws still in force).

This provisional organization will be dissolved on the establishment of the Basin Authority. Its staff will be limited to one special advisor, one secretary, other facilities and a small operating budget necessary for the performance of its duties.

For each of the seven above-mentioned projects, the provisional structure will prepare a project document, look for finance and start monitoring the execution of the first six projects. The seventh project should be implemented immediately. The location of this provisional organization and how far it would be subject to the United Nations system and to the Governments of the riparian states should be defined by the first preparatory meeting of plenipotentiaries. This meeting should also give the United Nations system in general and ECA in particular, the formal mandate to prepare and to look for financing for planned prelimianry feasibility studies and activities. This approach would make for time in advancing specific areas of co-operation which are of most interest to the riparian states. This means

that some feasibility studies of common interest could start before the setting up of the Authority, once the riparian states concerned affirm their interest in it and the urgency which they attach to it. These include, in particular, the study on the development of the Ubangui by constructing a storage dam upstream, the study on stabilization of the levels of Lake Tanganyika, feasibility studies on joint basic industries, establishment of a data bank and establishment of an environment monitoring system.

PROJECT FOR ESTABLISHMENT OF A JOINT COMMISSION
TO DEVELOP THE ZAIRE RIVER BASIN

Terms of reference

1. Background

The Zaire and its tributaries constitute one of the most important hydrographical networks on the African continent. It is an international river augmented by water courses rising in Angola. (lower reaches), the United Republic of Cameroon, the Congo, the Central African Republic and Zaire. With a drainage basin encompassing approximately 3.5 million 'm2 and extending from one side of the equator to the other, this trans-equatorial river, the only one of its kind on the African continent, enjoys particularly favourable weather system. The Zaire is consdquently the major African river in terms of flow and therefore one of the most important navigable routes in Africa. But despite these excellent conditions for inland navigation, transport development along its waterways has to date failed to realize its full potential for lack of second co-ordinatioh, although the need for such organization has always been apparent. The results of organizational attempts, primarily bilateral agreements (Congo-CAR for Oubangi, Angola-Zaire for the lower reaches), have been negligible. Aware of that situation three of the bordering States, recently decided to set up a joint development commission for the Zaire River.

2. Objectives

The long-objectives propose, pursuant to point VII of the Plan of Action of the United Nations Conference on Water Resources (Mar del Plata, 1977), adopted by the General Assembly in resolution 32/158, to ensure the formation of new river commissions andreactivate those already in existence so that an African conference of international commissions on water resources can be held as soon as possible.

On the short term this study aims to define the joint development commission in accordance with current and future contexts of the Zaire river and to determine the technical and economic terms of its establishment.

3. Implementation phases

On the most advanced level a river development agency should ensure co-ordinated and harmonious management of the full range of river potential. This includes navigation, irrigation and drainage, electric power production, protection against flooding and drought, development of food growing areas, industrial and domestic water uses, recreational activities and natural reserves. Problems of choice are created by the different priorities each country may wish to assign to those prospective uses. The countries

concerned must then agree on the relative importance of each alternative. This will determine the approach and composition of the new commission, which should be consistent with its common interests. The following steps are proposed.

3.1 Initially, a country-by-country inventory of all current projected water uses in the Zaire river basin (navigation, irrigation, power, etc), compilation of the corresponding date and evaluation of their relative importance from the economic, social, political and other standpoints.

3.2 Report on all international organizations operating in the sub-region (especially those to which any of the countries interested in the project belong) that might directly or indirectly affect the project, such as: UDEAC, CEPGL, CEEAC, the joint Congo-CAR-Zaire and Angola-Zaire commissions with their specialized committees, and so forth.

3.3 A global analysis by country of all such information endeavouring to identify their most common and typical features.

3.4 Development of possible profiles for the joint commission, with a detailed study in each case of needs (personnel, financing, equipment), possibilities of strengthening or altering commissions already in operation, advantages and disadvantages and the like.

3.5 Presentation of these profiles to an expanded preparatory committee (experts, economists etc.) representing all of the countries involved. With the help of the ECA, the committee would then recommend to the governments the type of commission best suited to their needs.

The final proposal would then be submitted for financing.

4. Implementation planning

The provisional programme for implementation of the study may be outlined as follows:

- July/August 1983: Letters to establish contact and present implementation programme to the countries - inventory of all necessary data and proposal that countries begin to gather information via all specialized services - requirements for consultant to be recruited.

- September 1983: Mission to collect national data. Arrangements for formation of the preparatory committee: nomination of participants from each country, choice of meeting site, and so forth.

- October 1983: Analysis of data compiled by the ECA. Establishment of model projects by the joint commission: examination of material by the preparatory committee.

- November 1983: Final definition of the project and submission to national governments.

5. Contributions

5.1 Contributions by Governments of the Zaire river basin countries:

- to arrange, insofar as possible, for the compilation of data to be stipulated by the ECA; to supply tran port for in-country travel by one or more ECA experts during missions; to furnish the secretariat and other services at the work sites.

- to assign in each country employees of the services involved to assist the expert or experts during missions for compilation and checking of data in the field and formation of the preparatory committee.

- to take all useful steps and issue all necessary provisions facilitating access to and acquisition of data.

- to underwrite the expenses of project participation by the competent personnel in each country.

- to collaborate with the ECA in following up actions undertaken within the project framework.

5.2 ECA contributions

- to underwrite project participation by the competent ECA consultant or consults.

- to submit the project to the Governments in final form.

- to collaborate with the Governments on actual consitution of the joint commission, location of financing, technical assistance, and the like.

6. Countries involved in the study

These have been classified into two categories:

6.1 Countries bordering the hydrological complex of the Congo-Zaire river and its tributaries, These include Angola, utilizing the lower reaches of the river in conjunction with Zaire, Cameroon, where part of the traffic is carried by the Sangha to the Ubangui, the Congo, the Central African Republic, Zaire and Zambia, bordering the river and its major tributaries.

6.2 Land-locked neighbouring countries using the river as a means of transit. These include Chad, much of whose traffic crosses the Central African Republic via the river, Burundi and Rwanda, which with Zaire, make up the Economic Community of the Great Lakes Countries, employing the river route as an outlet to the Atlantic Ocean.

7. Description of consultant position

7.1 Study language: Since most of the countries concerned in the project are French-speaking, French should be adopted as the language of the study.

7.2 Duration, recruitment: This period is estimated at two and one-half months consisting of one week of preparation at the ECA in Addis Ababa, one month of missions in the countries and the remainder to write the study report at the ECA in Addis Ababa.

7.3 Special requirement: In addition to his/her specialization in management of inland waterway transport, the consultant should be well versed in the duties and operation of international commissions managing river basins such as the Tennessee Valley Authority in the USA, the Rhine Central Commission (Strasbourg, France) and the Danube Commission (Budapest, Hungary) in Europe, and the Senegal River Development Organization (Dakar, Senegal) in Africa.

Annex 7.2

DRAFT CONVENTION RELATING TO THE STATUS OF THE RIVER CONGO

The Heads of State and Government of:

- the People's Republic of Angola;
- the Republic of Burundi;
- the United Republic of Cameroon;
- the Central African Republic;
- the People's Republic of the Congo,
- the Republic of Rwanda,
- the United Republic of Tanzania;
- the Republic of Zaire;
- the Republic of Zambia

- Considering the General Act of the Berlin Conference of 26 February 1885, the General Act and Declaration of Brussels signed on 2 July 1890 and the St. Germain en Laye Convention of 10 September 1919;

- Considering the United Nations Charter of 26 June 1945;

- Considering the Organization of African Unity Charter of 25 May 1963;

- Considering the Monrovia Declaration of Commitment (made by the Heads of State and Government of the Organization of African Unity) of July 1979;

- Considering the Plan of Action and the Final Act of Lagos of April 1980;

- Considering their collective will to speed up the economic and social advancement of their peoples through rational exploitation and development of the natural resources of the RiverCongo basin;

- Considering that joint development of the River Congo and its integrated exploitation offer good prospects for fruitful economic co-operation;

- Resolved to jointly promote the economic and social development and integration of their economies, with a view to increasing the collective self-sufficiency of their countries and promoting an endogenous and self-maintained development, agree to the following:

Title 1 - Definitions

Article 1. The Central African River called «Congo» in the General Act of Berlin of 26 February 1885, the General Declaration made in Brussels on 2 July 1890 and the Saint-Germain en Laye Convention of 10 September 1919, is the subject of the present Convention.

Its basin is bounded by the water sheds of the adjacent river basins as shown on the map annexed to this present convention of which it is a part. It is therefore comprises all the drainage areas of the River, its tributaries, sub-tributaries, lakes and outlets including the Lake Tanganyika and its east bank tributaries.

This River is called «Congo» in the Peoples Republic of the Congo, «Zaire» in the Republic of Zaire and either «Congo» or «Zaire» by other sovereign African countries, the two names denoting the same river and equally valid. In the present Convention, the river «Congo» or «Zaire» is hereafter referred to as the «River».

Article 2: The riparian states of the River are those that have a part of their territory within the basin of the Rivern namely:

- the People's Republic of Angola;
- the Republic of Burundi;
- the United Republic of Cameroon;
- the Central African Republic;
- the People's Republic of the Congo;
- the Republic of Rwanda;
- the Republic of Rwanda;
- the United Republic of Tanzania;
- the Republic of Zaire;
- the Republic of Zambia.

The riparian states of the River which adhere to the present Convention are hereafter referred to as «Contracting states».

Title II -

Article 3: The General Act of Berlin of 26 February 1885, the Brussels Act and Declaration of 2 July 1890 and the St. Germain en Laye Convention of 10 September 1919 relative to th- River Congo, its tributaries, sub-tributaries, lakes, branches and outlets are abrogated and remain abrogated in all the national territories of the People's Republic of Angola, the Central African Republic, the People's Republic of the Congo, the Republic of Rwanda and the Republic of Zambia.

Title III - Principles

Article 4: In all the national territories of the People's Republic of Angola, the Republic of Burundi, the United Republic of Cameroon, the Central African Republic the People's Republic of the Congo, the Republic of Rwanda, the United republic of Tanzania, the Republic of Zaire and the Republic of Zambia, the River, including all its tributaries, sub-tributaries, lakes, branches and outlets is declared «International River» within the framework of the provisions of the present Convention.

Article 5: The States of Angola, Burundi, Cameroun, the Central African Republic, the Congo, Rwanda, Tanzania, Zaire and Zambia, hereafter referred to as the «Contracting States», solemnly affirm their willingness to develop close co-operation with each other to ensure rational tapping of the resources of the basin of the River.

Article 6: The ContractingStates mutually guarantee each other freedom of navigation and equal treatment of users on the River, its tributaries, sub-tributaries, lakes, branches and outlets.

Article 7: Exploitation of the River, its tributaries and sub-tributaries shall remain open to each of the Contracting States, in accordance with the modalities defined in the present Convention.

Title IV - Agriculture and industry

Article 8: The Contracting States shall be informed as soon as possible of any project relating to exploitation of the River.

Any project likely to substantially modify the characteristics of the River network, its conditions of navigability, the agricultural and industrial activities, the sanitation of the waters, the biological features of its flora and fauna, its water level or the natural environment of thecatchment basin shall be submitted for approval by the riparian states prior to its implementation.

Article 9: Any structure of common benefit, whether it is to be constructed by an individual state or by several states, shall be the subject of a special convention which specifically sets forth its conditions of implementation and use, as well as the reciprocal commitments to be made by States.

The special conventions will be subject to the same procedures of approval, ratification and registration as the present convention.

Title V - Navigation and transport

Article 10: In all the national territories of the Contracting States, navigation on the River, its tributaries, sub-tributaries, lakes and outlets shall be entirely free for all nationals, merchant ship and goods of all riparian Contracting States, and for ships chartered by one or several riparian states, on a footing of perfect equality, as far as part dues and taxes forcommercial navigation are concerned.

The freedom of navigation and equal treatment also applies to riparian Contracting States which do not have a navigable reach in the part of their territory within the basin of the River.

Article 11: Land-locked or semi land-locked African countries which do not border on the River, its tributaries, and sub-tributaries could, on request be granted special conditions of navigation.

A special convention approved by the Contracting States and the requesting non-riparian states, will specify the terms for use of the navigable waterways of the River, its tributaries and sub-tributaries by the merchant ships and freight of the non-riparian states.

Article 12: Merchant ships and boats of other provenance other those stated in Articles 10 and 11 shall be subject of a common regulation to be approved by the contracting states.

Article 13: The Contracting States undertake to maintain their currently navigable sections of the River, its tributaries and sub-tributaries, lakes, branches and outlets in a navigabl State, in accordance with a regulation of exploitation which shall be jointly defined and approved by the Contracting States.

Article 14: The Contracting States undertake to improve and develop the navigable waterway network of the basin of the River on the basis of a joint programme. The mode of financing initial or other works or structures for improving the navigability of the River, its tributaries, sub-tributaries, branches, outlets, lakes or artificial canals, as well as the modalities for maintaining, use and paying off the cost of structures shall be specified in the special conventions approved by the Contracting States and systematically incorporated in the regulation on exploitation referred to in article 13.

Article 15: Taxes and dues levied on ships or goods using the River, its tributaries, sub-tributaries, lakes, branches, outlets, or their installations, including the maritime outlet shall be general and shall not involve any differential treatment.

Article 16: Existing roads, railways, lateral or connecting canals, structures with locks and artificial lakes existing or those which may be constructed with the special object of obviating the innavigability or correcting the imperfections of the waterway in certain sections of the River, its tributaries, sub-tributaries, lakes, branches and outlets, shall be considered under the special regulations approved by the Contracting States, as dependecies of the river navigation and shall be open to traffic of all nations. There shall be collected on these roads, railways, canals, locks or artificial lakes only tolls calculated on the cost of construction, maintenance and management, and on the profits due to the promoters.

As regards the tariff of these tolls, subjects of Contracting States shall be treated on a perfectly equal footing.

Article 17: Each Contracting State shall ensure the public safety, policing of the river and sanitary control of the sections of the river within its territory, by facilitating, as much as possible, the movement of ships and goods.

Article 18: Each Contracting State shall ensure the safety of navigation and control over the navigable sections in its territory.

A common system shall be approved by the Contracting States to harmonize and co-ordinate the methods, measures and equipment for ensuring the safety of navigation and its control, by facilitating, as much as possible, the movement of ships and goods.

In conforming with the provisions of article 13, the common system referred to above and the standardization of methods, measures and equipment, will be aimed at gradually integrating the navigation safety and control systems of Contracting States.

Article 19: The general provision on navigation also apply to rough timber.

A special Convention approved by the Contracting States shall stipulate the special terms for floating of timber on the navigable waterways in the basin of the River.

Title VI - Environment

Article 20: The development of the basin of the River and the exploitation of its natural resources should as much as possible respect or improve the natural, physical and bilological balances.

In application of Title IV - Article 8 and 9 of the present Convention, the Contracting States shall undertake individually and collectively to protect and improve as much as possible the environment of the basin and of its zone of climatic influence.

Article 21: A special convention approved by Contracting States shall define the common regulations for potection of the environment and each State will undertake to carry out these regulations of the section of the basin in its national territory These regulations shall relate mainly to the vegetation, fishery resources, protection of the drainage areas of high basins and protection against erosion and floods.

Article 22: The Contracting States undertake to closely co-ordinate their programmes and activities for protection and improvement of the environment and to provide mutual assistance in the control and protection of the environment.

Article 23: As and when necessary, programmes of studies and activities for rehabilitating or improving the environment shall be undertaken jointly by the contracting States, particularly in the event where the exploitation of certain natural phenomena contaminate or can cause contamination of the waters of the rivers and lakes in the basin.

Title VII - Use of the waters

Article 24: In the context of the present Convention, the expression «Use of the waters» (Utilisation des eaux) means «water consumption», namely taking of water from the waterways in the basin without restoring this water into the waterways of the basin, or the difference between the volume of water taken and the volume put back.

Article 25: Each Contracting State has the right to use the waters in the section of River basin in its national territory.

The right of each contracting state to use of the waters in the River basin, excludes the right to use the waters of other contracting states.

Article 26: As and when necessary, the Contracting States shall draw up and approve a special convention outlining the rights of parties to use of the waters, on the basis of the principles of international law and the Helsinki regulations of 20 August 1966 relative to equitable use of waters of an international drainage basin.

Title VIII - Application

Article 27: The Contracting States agree to establish a joint co-operation body to be responsible for implementing the present convention, to promote and to co-ordinate studies and works for development of the River, its tributaries, sub-tributaries, lakes, branches and outlets.

Article 28: The rates of procedure of this joint body, its structure, operating conditions as well as the powers that the Contracting States shall delegate to the person responsible for this organization, within the scope of this present convention and the general development of the basin of the River shall be defined in a special convention.

Title IX - General provisions

Article 29: The present convention shall be submitted for ratification by each Contracting State in accordance with its own constitutional procedures, the ratification instruments shall be deposited with the Government of which shall duly notify each Contracting States.

Article 30: The present convention shall come into force for each Contracting State from the date of its ratification by that State, after which it shall join the ranks of Contracting States which have already ratified it.

Each riparian state of the River can adhere to the present convention. To do this, the state shall address a written request of ratification to the depository state, which shall notify other Contracting States of the fact.

Article 31: Revision of the present convention can be requested by each and every one of the Contracting States. The request for revision shall be addressed to the Government of the depositary state for ratification instruments, which shall give notice thereof to other Contracting States.

Article 32: The present convention can be denounced by a signatory state 99 years after its coming into force. The denunciation shall be taken in the form of a written notice addressed to the Government of the depository state for ratification instruments, which shall duly inform theother contracting states. It shall take effect after six months and shall not, unless agreed to the contrary, apply to commitments made prior to notification.

Article 33: All misunderstandings arising between states, concerning interpretation or application of the present convention shall be resolved through canciliation or mediation. In the absence of agreement, the Contracting States shall inform the arbitration and cancilation commission of the Organization of African Unity. As a last resort, the states shall inform the International Court of Justice of the Hague.

In case of emergency, the common organization referred to in article 25 shall take measures aimed at safeguarding the principles adopted in the convention, while awaiting resolution of the disagreement.

Article 34: The present convention shall be sent to the secretary-General of the United Nations in accordance with article 102 of the United Nations Charter and to the Secretary-General of the Organization of African Unity.

In faith whereof, we, the Heads of State and Government of the People's Republic of Angola, the Republic of Burundi, the United Republic of Cameroon, the Central African Republic, the Republic of the Congo, the Republic of Rwanda, the United Republic of Tanzania, the Republic of Zaire and the Republic of Zambia, sign the present Convention. Done on 19 ; in copies in the French, Portuguese and English languages of which the copies in each of the languages are equally authentic.

The President of the People's Republic of Angola .....
The President of Burundi .....
The President of the United Republic of Cameroon .....
The President of Central African Republic .....
The President of the People's Republic of the Congo .....
The President of Rwanda .....
The President of the United Republic of Tanzania .....
The President of Zaire .....
The President of Zambia .....

CONVENTION ON THE ESTABLISHMENT OF THE AUTHORITY TO DEVELOP THE BASIN OF THE RIVER

Title 1 - Preamble

The Heads of State and Government of:

- the People's Republic of Angola,
- the Republic of Burundi;
- the Republic of Cameroon;
- the Central African Republic;
- the People's Republic of the Congo;
- the Republic of Rwanda;
- the United Republic of Tanzania;
- the Republic of Zaire;
- the Republic of Zambia

- Considering the United Nations Charter of 26 June 1945;

- Considering the Charter of the Organization of African Unity of 25 May 1963;

- Considering the international convention of 1963, relating to the status of the River, particularly Articles 27 and 28;

- Determined to promote and strengthen co-operation and economic exchanges between their states, and to promote the joint development of the River and exploitation of the ressources of the basin;

- Resolved to maintain and promote in their states conditions favourable to the attainment of these objectives, and to overcome all obstacles in this respect, agree to the following:

Title II - Aims of the Organization

Article 1: It is established a joint co-operation body, called «Autorité Internationale pour l'Aménagement du Bassin du Fleuve» (International Authority for the development of the Basin of the River), «A.B.F.» in short, to develop the River, its tributaries, sub-tributaries, lakes, branches and outlets and to rationally exploit the natural resources of its basin. This body shall be located at ..... It can be transferred to any other location by decision of the Heads of State and Government of member countries.

Article 2: The (International) Authority for the development of the basin of the River (ABF) shall be responsible for:

(a) application of the international convention of 1983 relating to the status of the River;

(b) promotion of studies and projects for developing the resources in the basin of the River within the territories of member states of the Authority;

(c) undertaking all technical and economic missions that member states would collectively wish to entrust to it.

The Authority may receive gifts, request loans and call on technical assistance to ensure the performance of its duties.

Article 3: This Authority does not hinder the existence or operation of national or regional organisations involved in other or more comprehensive areas of co-operation.

Title III - Conference of Heads of State and Government

Article 4: The Conference of Heads of State and Government is the supreme body of the Organization. It shall define the co-operation and development policy of the Authority. It shall take decisions concerning the general economic policy of the Authority and any other decisions that come under its authority.

Article 5: The Conference of Heads of State and Government of the Authority shall meet in ordinary session once every two years. It can convene an extraordinary meeting at the instance of the Chairman or at the request of a third of its member States. Decisions shall be taken with the unanimous consent of all members.

Article 6: All member States are bound by the decisions of the Conference of Heads of State and Government, and they shall undertake to implement them.

Article 7: The Chairmanship of the Conference of Heads of State and Government shall rotate alphabetically among the Heads of State and Government of member States and it shall be for a period of two years.

Title IV - Permanent organs

Article 8: The permanent organs of the (International) Authority for developing the Basin of the River are:

- The Council of Ministers
- The General Secretariat

Any other common organ that would be considered necessary for attaining the objectives of the Authority can also be established.

Article 9: The Council of Ministers is the planning and control organ of the Authority. It shall formulate the policy for development of the River, the exploitation of its resources and co-operation among the riparian states. It shall comprise one minister from each member State. The development programmes concerning one or several member States shall be approved by the Council of Ministers of the Authority, before implementation of the programmes begin.

The Council of Ministers shall define the priority projects for developing the River, its tributaries, sub-tributaries, lakes, branches and outlets. It shall define joint programmes for developing the natural resources of the basin and all other joint activities which may be necessary as part of the application of the Convention on the status of the River.

Article 10: It shall determine the contributions to be made by member States to the operating budget as well as to studies and projects budgets of the Authority, whose budget it will be responsible for approving.

Decisons of the Council of Ministers are binding on all member States.

Article 11: Member States shall assume the chairmanship of the Council of Ministers of the Authority in turn, for a period of two years.

Article 12: The Council of Ministers shall meet once a year in an ordinary session to be called by its chairman, and shall meet in extraordinary session at the request of a third of its member States.

The Chairman of the Council of Ministers is required to convene and preside over the ordinary and extraordinary sessions.

All States are bound to attend meetings of the Council of Ministers.

Decisions of the Council of Ministers shall be made on the unanimou agreement of all member States.

Meetings can be organized in each of the member States in turn.

Article 13: The Chairman of the Council of Ministers shall represent the Authority for the period between two sessions.

Article 14: He shall take decisions which within his competence, in accordance with the directives of the Council of Ministers and within the limits of the powers entrusted to him.

Article 15: The General Secretariat of the Authority shall be headed by a secretary-General appointed by the Heads of State andGovernment for a period of 3 years, renewable on the recommendation of the Council of Ministers. His appointement shall similarly be terminated under the same conditions.

The General secretariat is the executing body of the Organization. It shall apply the decisions of the Council of Ministers of the Authority and regularly report to it on the implementation of its decisions, and on any initiative that it shall be called upon to take in connection with directives given by the Council of Ministers and by its Chairman.

The General Secretariat shall enjoy diplomatic (Privileges and) immunities in member States. These (privileges and) immunities shall not apply to local officials.

The organization chart of the General secretariat shall be elaborated by the Council of Ministers at its first meeting.

Article 16: The secretary-General of the Authority is responsible for management of staff and property of the Authority. He shall administer the financial operations of the Authority, especially its operating budget and the studies and works budget.

Without prejudice to the provisions of article 15, the staff of the Authority shall be under the Secretary-General and shall be recruited and dismissed by him.

Article 17: The Secretary-General is responsible to the Council of Ministers, to whom it shall give account of his management and the activities of the General Secretariat. He shall be under the authority of the Chairman of the Council of Ministers for the period between two sessions.

Article 18: The Secretary-General shall be responsible for collecting basic data on the River in the territories of member States and shall submit to the Council of Ministers joint studies and work programmes for co-ordinated development and rational exploitation of the resources of the Basin of the River.

It shall examine projects drawn up by the States for the development of the River and shall submit them with recommendations to the Council of Ministers of the Authority.

Article 20: The Chairman of the Council of Ministers shall represent member States in their dealings with international aid or bilateral co-operations institutions as far as the River is concerned.

In this connection and in conformity with article 13 above, he shall be empowered to negotiate and act on behalf of all member States of the Authority, within the limits of the powers entrusted to him by the Council of Ministers.

Article 21: The operating budget and the studies and works budgets shall be financed by member States and by any other internal or external sources decided on by the Council of Ministers.

Title V -- General provisions

Article 22: All riparian States can adhere to the Authority; for this, they shall address a written request to the depository state for ratification instruments, which shall inform the other member States of the fact.

Article 23: The present convention may be revised at the request of one member State. The request for revision shall be addressed to the Chairman of the Conference of Heads of State and Government in uniting.

Article 24: All misunderstandings arising out of the interpretation or application of the present convention shall be resolved through conciliation or mediation. Failing agreement, the member States shall inform the Canciliation and Arbitration Commission of the Organization of African Unity. As a last resort, they shall consult the International Court of Justice of the Hague.

Article 25: Any member State, which wishes to withdraw from the Authority may inform the Chairman of the Conference of Heads of State and Government in uniting and he shall immediately notify the other member States of the decision.

The present statutes shall cease to apply this State six months after the notification, the decision shall not apply to commitments made prior to notification of withdrawal.

The withdrawal of a member State does not entail dissolution of the Organization.

Article 26: The Organization may be dissolued at the request of at least two-thirds of the member States.

Article 27: The Conference of Heads of State and Government shall announce the dissolution to the majority of the member States and take the necessary measures for devolution of the property of the Organization.

Article 28: The present Convention shall come into force, for each country, from the date of its ratification, after which the Contracting State shall immediately join the ranks of other Contracting States which have already ratified the Convention.

The instruments of ratification shall be deposited with the Government of the Republic of which shall inform the other member States of the fact.

Article 29: The revision of the present Convention can be requested at any time by any Contracting States. The request shall be addressed in uniting to the Government of the depository State for ratification instruments, which shall give notice thereof to the other Contracting States.

Article 30. The present Convention may be denounced by any Contracting State, 99 years after its coming into force. The denunciation shall take the form of a written notice addressed to the Government of the depository State for ratification instruments, which shall inform the other states thereof. It shall take, effect after six months, without prejudice, except agreed to the contrary, to commitments made prior to the notification.

Article 31: On entry into force, this Convention shall be submitted to the United Nations General Secretariat, in conformity with article 102 of the United Nations Charter, and to the Secretary-General of the Organization of African Unity.

In faith whereof, we the Heads of State and Government of the People's Republic of Angola, the Republic of Burundi, the United Republic of Cameroon, the Central African Republic, the People's Republic of the Congo, the Republic of Rwanda, the United Republic of Tanzania, the Republic of Zaire and the Republic of Zambia, sign the present Convention. Done on 19 , in copies in the French language, copies in the Portuguese language and copies in the English language, of which the ocopies in each of the three languages are equally authentic.

The President of the People's Republic of Angola .....
The President of the Republic of Burundi .....
The President of the United Republic of Cameroon .....
The President of the Central African Republic .....
The president of the People's Republic of the Congo .....
The President of the Republic of Rwanda .....
The President of the United Republic of Tanzania .....
The President of the Republic of Zaire .....
The President of the Republic of Zambia .....

DRAFT DECISION DEFINING THE GENERAL POLICY FOR DEVELOPMENT OF THE BASIN OF THE RIVER

The Heads of State and Government of:

- the People's Republic of Angola;
- the Republic of Burundi;
- the United Republic of Cameroon;
- the Central African Republic;
- the People's Republic of the Congo;
- the Republic of Rwanda;
- the United Republic of Tanzania;
- the Republic of Zaire;
- the Republic of Zambia;

- Considering the Monrovia Declaration of Commitment of July 1979;
- Considering the Lagos Plan of Action and the Final Act of Lagos adopted by the Heads of State and Government of the Organization of African Unity in April 1980;
- Considering the International Convention of 1984 relating to the status of the River;
- Considering the International Convention of... 1984, establishing the Authority of the Basin of the River;

Reaffirm their wish to carry out the decisions and recommendations of the Lagos Plan of Action and its Final Act, particularly Chapters II, VI, IX and XI;

Decide that the General Policy for Development of the Basin of the River, its tributaries, sub-tributaries, lakes, branches and outlets shall be aimed at the integrated development of the river network of the Basin, with priority being given to:

- Regional projects of economic and social benefit to several states;
- Multi-purpose projects which can substantially influence the development of irrigation, navigation and the production of energy;
- Projects which further open up inland areas of the basin and its riparian states;
- Projects which help to reduce the food deficit of the riparian states;

- Installation and operation of a permanent environment monitoring system, capable of detecting any adverse developments in time, and which will consider and propose to the riparian states, effective short, medium and long term preventive and remedial measures;

- Collection of all existing data and documentation on the basin of the River and to establish a data bank for use by the riparian states;

- Preparation in the future of a General Programme for the Development of the basin, based on integrated control of the water and hydropower resources, the optimum exploitation of the natural resources of the basin, within the framework of maintaining the present environment and on the search for a balanced socio-economic development of the riparian states.

Mandate: The Council of Ministers and the Secretary-General of the Authority of the basin of the River to ensure implementation of this general policy and to execute the first joint programme.

In faith whereof, we, the Heads of State and Government of the Pecple's Republic of Angola, the Republic of Burundi, the United Republic of Cameroon, the Central African Republic, the People's Republic of the Congo, the Republic of Rwanda, the United Republic of Tanzania, the Republic of Zaire and the Republic of Zambia, approve the present decision. Done on 1984, in ten copies in the French and English languages the copies in both languages being equally authentic.

The President of the People's Republic of Angola.....
The President of the Kepublic of Burundi.....
The President of the Republic of Cameroon.....
The President of the Republic of Central Africa.....
The President of the People's Republic of the Congo.....
The President of the Republic of Rwanda.....
The President of the United Republic of Tanzania.....
The President of the Republic of Zaire.....
The President of the Republic of Zambia.....

- Establishment of joint industries designed to meet the needs of the Peoples of the riparian states and to produce economic and social development inputs of the riparian states locally.

Agree, as a first stage, to jointly promote the following:

- The integrated development of the Upper Ubangui, to ensure economic and all-year navigation on all the courses of the river and joint production of basic energy;

- The improvement of the Lukuga to stabilize the levels of Lake Tanganyika;

- The integrated development of the Upper and Lower Sangha to ensure economic and all-year navigation on them;

- A feasibility study on an iron and steel industry and fertilizer industries, jointly owned by several states, and using energy produced at Inga and local raw materials from several riparian States, with the objective of establishing semi-public inter-State industrial companies capable of providing quality products at low cost for several riparian states;

- The construction of rail links from Kassama to M'Pulungu and from Uvinza to Bujumbura and to undertake studies on the Mungbere-Pakwack rail link;

- Systematic study of all the waterways in the basin, with a view to expanding the network of hydrographic measuring equipment and to improve knowledge of the topography;

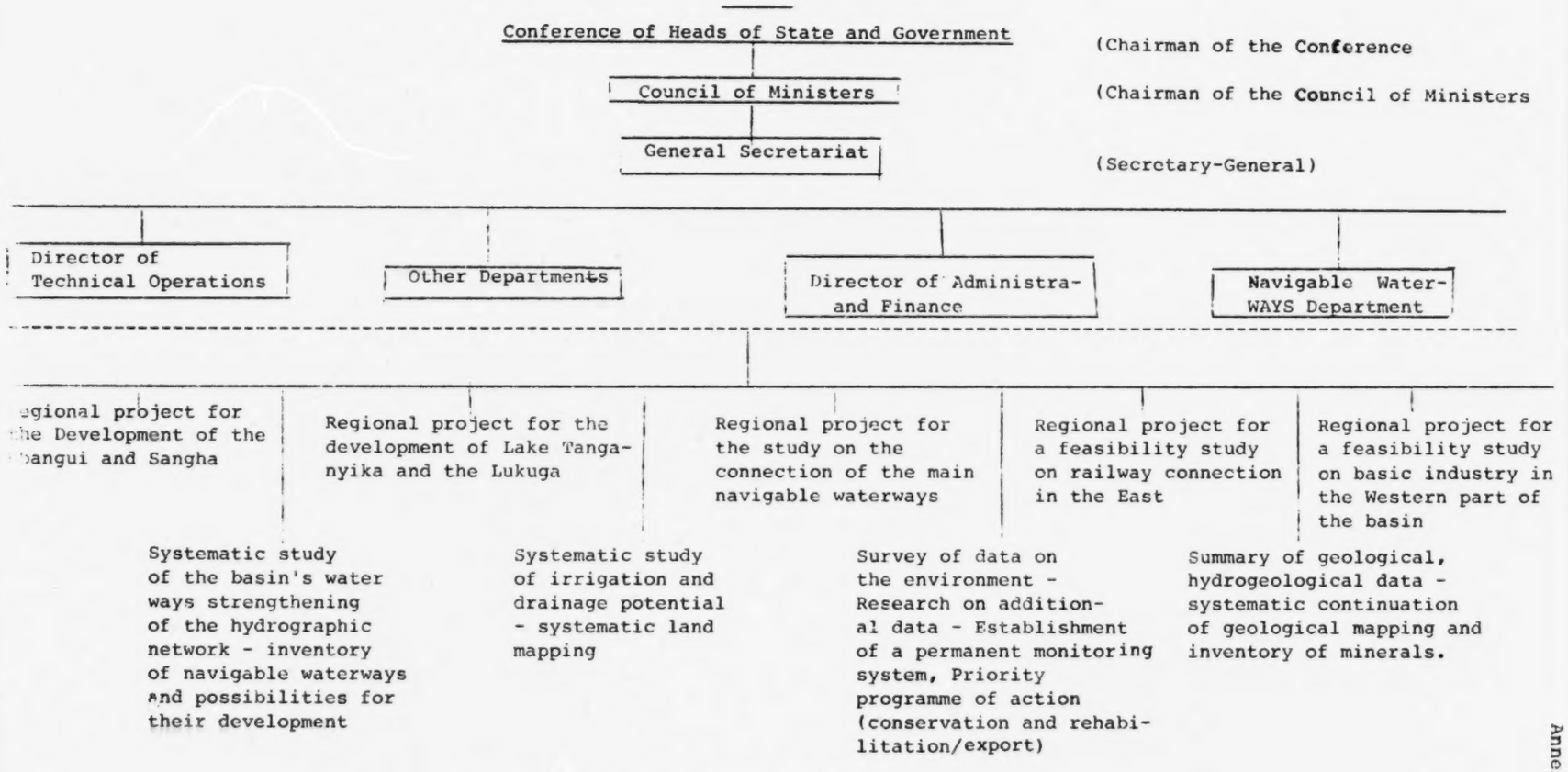
- A survey of all hydroelectric power sites and the effects up-stream and downstream of the structures;

- Drawing up of a programme for development of the waterways for navigation and for improvement of existing navigable waterways;

- Systematic study of the land resources and the economic benefits of irrigation, for the purpose of drawing up a regional priority programme aimed at enabling the riparian states achieve self-sufficiency in food;

- Preparation of a synthesis of all the information available on the geology, hydrogeology and minerals of the basin and to continue the systematic cartography of the basin, with priority being given to meeting the needs of the riparian states and those of the least developed states in this respect.

INTERNATIONAL AUTHORITY FOR THE DEVELOPMENT OF
CONGO/ZAIRE RIVER BASIN


Conference of Heads of State and Government
(Chairman of the Conference
Council of Ministers
(Chairman of the Council of Ministers
General Secretariat
(Secretary-General)
Director of Technical Operations
Other Departments
Director of Administra- and Finance
Navigable Water-WAYS Department
egional project for the Development of the bangui and Sangha
Regional project for the development of Lake Tanganyika and the Lukuga
Regional project for the study on the connection of the main navigable waterways
Regional project for a feasibility study on railway connection in the East
Regional project for a feasibility study on basic industry in the Western part of the basin
Systematic study of the basin's water ways strengthening of the hydrographic network - inventory of navigable waterways and possibilities for their development
Systematic study of irrigation and drainage potential - systematic land mapping
Survey of data on the environment - Research on additional data - Establishment of a permanent monitoring system, Priority programme of action (conservation and rehabilitation/export)
Summary of geological, hydrogeological data - systematic continuation of geological mapping and inventory of minerals.

Annex 7.5

Annex 7.6 - No. 3

SITUATION OF THE BASIN

ECONOMIC COMMISSION FOR AFRICA
TRANSPORT, COMMUNICATIONS AND TOURISM DIVISION
1983-1984 STUDY ON THE ESTABLISHMENT OF THE
RIVER CONGO/ZAIRE BASIN AUTHORITY

International boundary

Capital

RIVERS —

Permanent

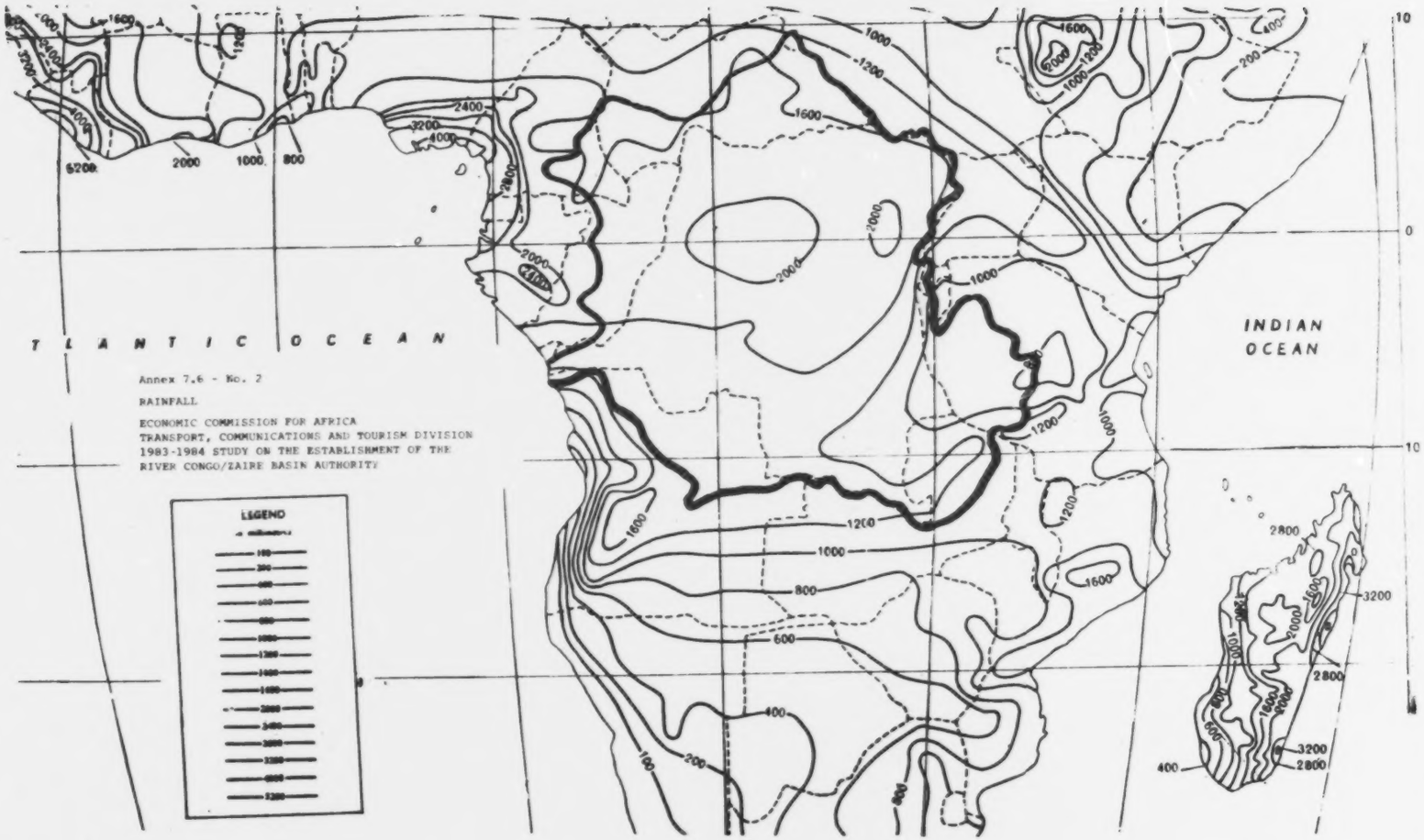
Seasonal

Lakes

CATCHMENTS —

Principal

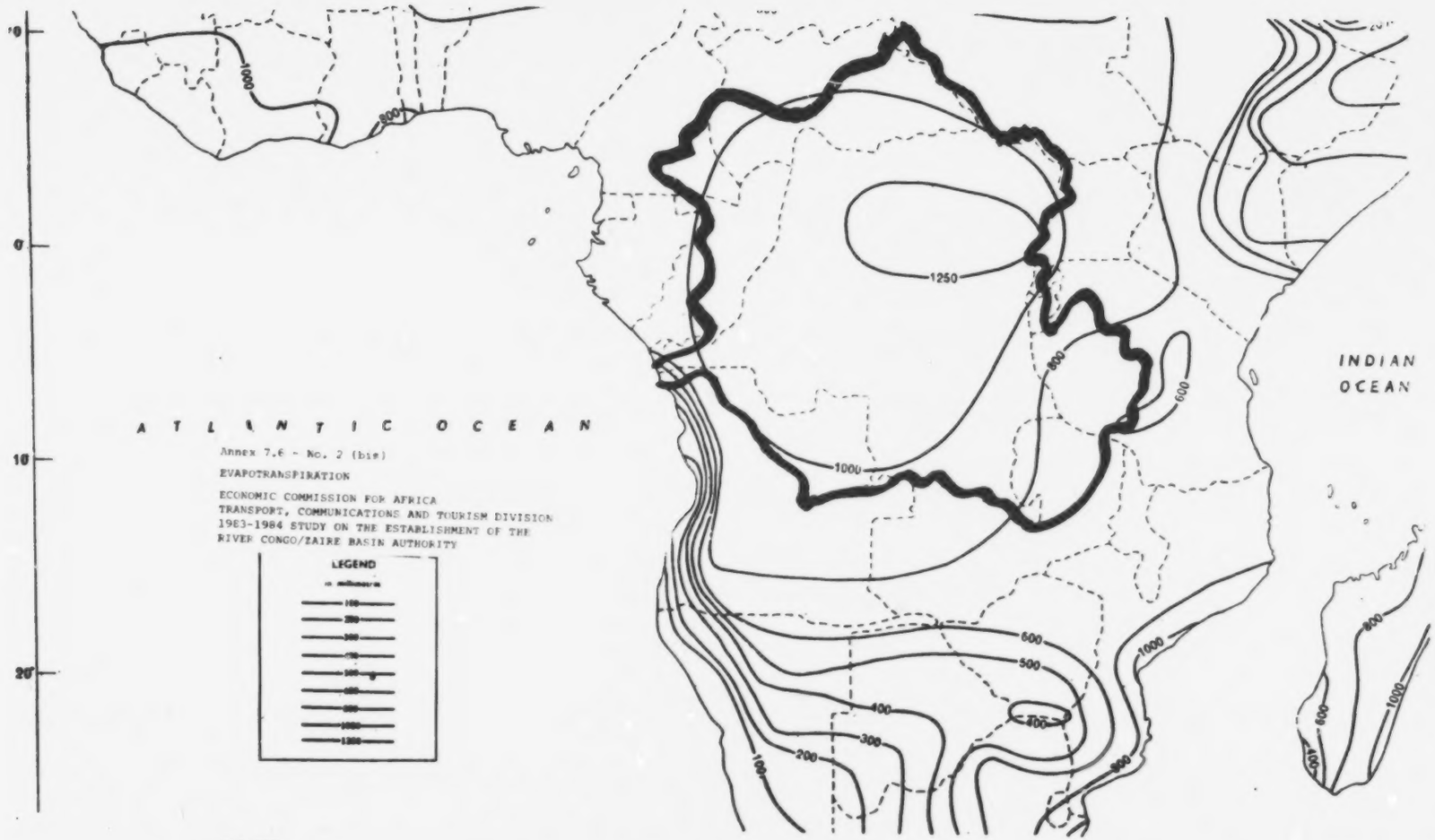
Secondary



Annex 7.6 - No. 2

RAINFALL

ECONOMIC COMMISSION FOR AFRICA
TRANSPORT, COMMUNICATIONS AND TOURISM DIVISION
1983-1984 STUDY ON THE ESTABLISHMENT OF THE
RIVER CONGO/ZAIRE BASIN AUTHORITY



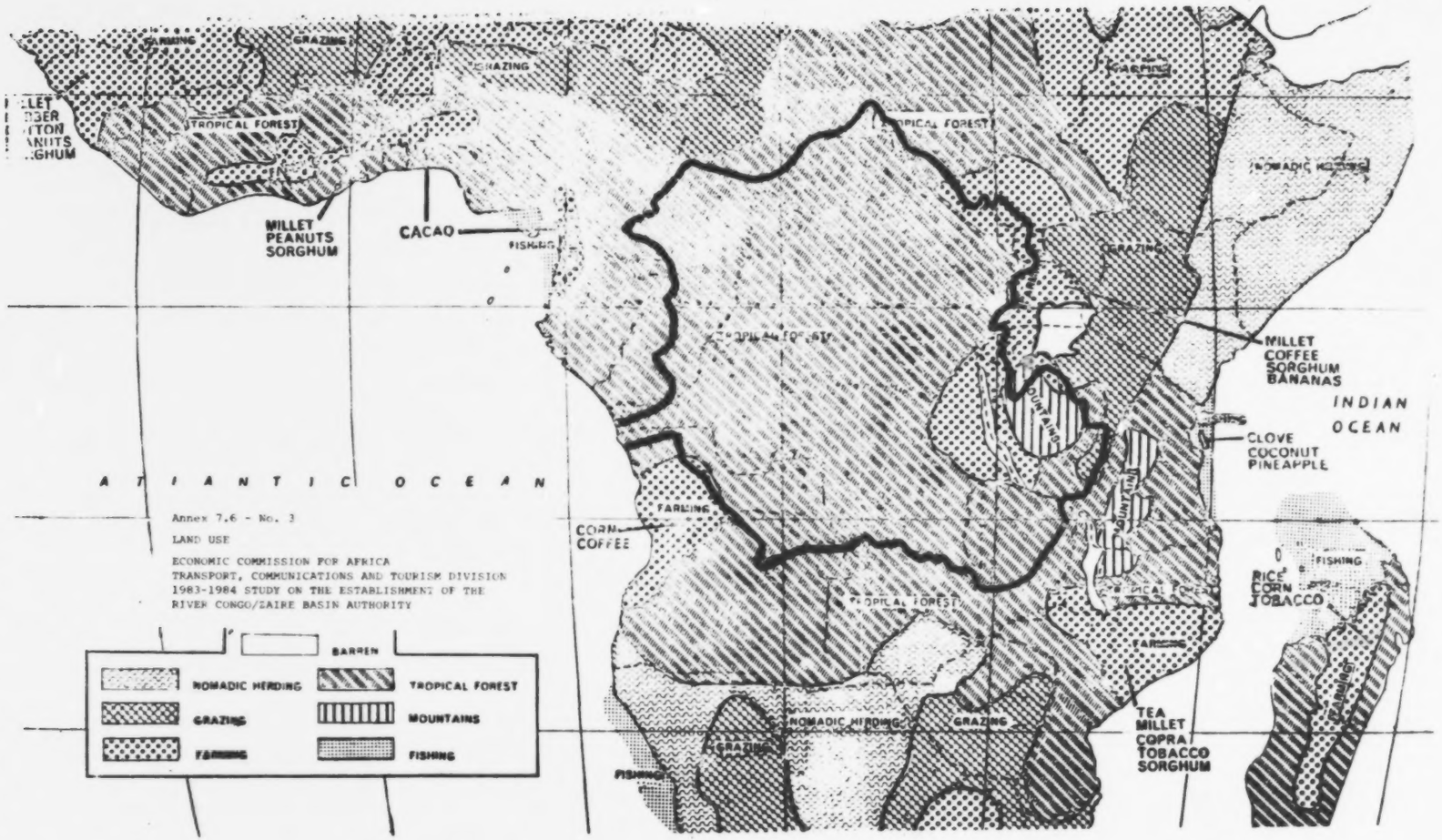
Annex 7.6 - No. 2 (bis)

EVAPOTRANSPIRATION

ECONOMIC COMMISSION FOR AFRICA
TRANSPORT, COMMUNICATIONS AND TOURISM DIVISION
1983-1984 STUDY ON THE ESTABLISHMENT OF THE
RIVER CONGO/ZAIRE BASIN AUTHORITY

LEGEND

086-275



Annex 7.6 - No. 3

LAND USE

ECONOMIC COMMISSION FOR AFRICA
TRANSPORT, COMMUNICATIONS AND TOURISM DIVISION
1983-1984 STUDY ON THE ESTABLISHMENT OF THE
RIVER CONGO/ZAIRE BASIN AUTHORITY

CONGO / ZAÏRE RIVR BASIN

NAVIGABLE WATERWAYS

- Permanent navigation - 1.3 m to 2 m draught
- Sub-permanent navigation - 1m to 1.5 m draught
- Navigation at 0.8 m to 1 m
- Not-permanent along certain reaches Navigable 6 months per year
- Main hydrographic network and falls
- International baundaries
- Capitals
- Towns
- Railway

HYDROELECTRIC INSTALLATIONS AND MAIN SITES

- Hydroelectric sites identified
- Hydroelectric sites studied
- Installations financed
- Installations financed - ongoing project
- Existing works
- High voltage power lines

ECONOMIC COMMISSION FOR AFRICA
TRANSPORT, COMMUNICATIONS AND TOURISM DIVISION.
1983-1984 STUDY ON THE ESTABLISHMENT OF THE
RIVER CONGO/ZAIRE BASIN AUTHORITY

The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

CART-M-84-2(Rev1)

Annex 7.7.1

CENTRAL AFRICAN REPUBLIC

1. GENERAL

   1.1 Area
   1.2 Population
   1.3 Climate - Vegetation

2. NATURAL RESOURCES

   2.1 Land
   2.2 Agricultural production

      2.2.1 Animal husbandry
      2.2.2 Agriculture
      2.2.3 Forests

3. MINERAL RESOURCES

4. ENERGY RESOURCES

   4.1 Hydro power
   4.2 Solar
   4.3 Geothermal
   4.4 Biomass
   4.5 Petroleum, lignites
   4.6 Economy of energy
   4.7 Conclusion

5. INFRASTRUCTURE AND EQUIPMENT

   5.1 Roads
   5.2 Waterways

6. CONCLUSION

CENTRAL AFRICAN REPUBLIC

1. GENERAL

1.1 Area

Out of a total area of 632,000 km2, the basin of the River covers the southern 2/3 of the CAR, some 406,000 km2 representing 66 per cent of the country in the basin, leaving the northern provinces of Ouhame-Pende, Ouham (with the exception of Upper M'Poko), Gribingui, Bamingui-Bangoran and Vakaga.

1.2 Population

The total population is approximately 2,500,000 (1983) and has been increasing at a rate of 2.5 per cent per annum. The population in the basin of the River is approximately 1,531,000, while the eastern provinces (Upper Kotto, M'bomou and Lower M'bomou) are practically empty, having been depopulated by Arab slavery. The average population density is 3.7 inhabitants per km2.

1.3 Climate and vegetation

The climate ranges from equatorial in the south-west to tropical towards the north-east and semi-arid towards the extreme north (see rainfall map 1.700 mm in the south to 1.200 mm in the north).

The primary forest covers a part of the south-west and centre-eastern regions (Bangasou-Bakouma), with some scrap-land towards the centre (in the direction of Sibut-Kagabandoro), which shows how far the forest extended in the past.

There is only 3,415,000 ha of forest remaining, mainly in the region of Bimbo, Lobaye and Sanga, out of which 2,415,000 can be economically exploited. Exploitation of the forest at present is badly organized and even seems to be somewhat hindered by the difficulties in transporting export products.

The remainder of the basin is covered by wooded savannah and savannah. There are climatic changes depending on with the altitude towards Bouar (high plateau) and Bamban. Just as in all other countries, the savannah is slowly deteriorating as the population increases, and as a result of shifting cultivation, bush fires and the cutting of firewood.

2. NATURAL RESOURCES

2.1 Land

1 million ha. or only 2 per cent of the surface area is under cultivation. Including fallow lands this would amount to about 5 per cent, which means that very large land areas are unexploited:

- 7 to 10 million ha. or 10 to 15 per cent exploited by semi-nomadic breeders (mostly Pehls);
- 3.4 million ha. of forest is exploited for timber.

2.2 Agricultural production

2.2.1 Animal husbandry: (The country has approximately 1 million cattle and transhumance zebus and 10,000 trypanotolerant bulls introduced between 1955 and 1965), 875,000 sheep/goats, 265,000 pigs, 1.7 million poultry and 0.5 million bees. This amount of livestock is not sufficient to meet domestic beef consumption which is about 160,000 heads per year; 60,000 of this is imported from Chad, Cameroon and Sudan. It can be estimated that a third of the livestock is in the basin of the River. Prospects for development of animal husbandry are very bright, provided general animal health care is also made available.

2.2.2 Agriculture: is mainly manual, with low productivity since draught animal farming is not developed

The main yields from subsistence agriculture is cassava (260,000 tonnes), groundnuts (9,500 tons), can (34,000 tons) millet/sorghum (47,000 tons) sesame (10,000 tons), paddy rice (12,000 tons) and an estimated 90,000 tonnes of fruits and vegetables. Producers consume between 70 to 90 per cent of this produce.

Cash crop agriculture: products are mainly coffee (15,000 tons per year), cotton (30,000 tonnes) and tobaco (1,800 tonnes), for which these has been a drastic fall in production.

Food production is not increasing as fast as the population growth, increasing at a rate of only 1.6 per cent as against 2.5 per cent population growth. This had led to a further worsening of the food deficit every year, and an increase in imports.

There are no figures available on fishing and hunting. Fish breeding produces about 100 tonnes of fish per year and the rich resources of the Ubangui and its tributaries also yield some 12,000 T/year. The biggest resource, which is the Lake Chad basin in the north is unexploited.

2.2.3 Forests Exploitable forest can be found at the following areas:

1. Bimbo: 320,000 ha. of which 200,000 can be exploited - it has 3 million cu.m. of red wood, 1 million cu.m. of white wood and 1.2 cu.m. of miscellaneous wood, making a total of 5.3 million ha.

2. Lobaye: 600,000 ha. of which 400,000 can be exploited - it has 8 million cu.m. red wood, 1 million cu.m. of white wood and 1.2 million of various woods, making a total of 16 million cu.m.

3. M'Bayere M'Cotto: 1 million ha. of which 800,000 can be exploited, comprising 5 million cu.m. of red wood, 10 million cu.m. of white wood, 8 million cu.m. of various woods, making a total of 23 million cu.m.

4. Upper Sangha: 660,000 ha. of which 530,000 can be exploited, comprising 17 million cu.m. of red wood, 3.2 million cu.m. of white wood, 4 million cu.m. of miscellaneous woods, making a total of 24 million cu.m.

5. Nola: 935,000 ha. of which 785,000 can be exploited, comprising 8.8 million cu.m. of red wood, 5.4 million cu.m. of white wood, 4.6 million cu.m. of miscellaneous wood, making a total of 19 million cu.m.

Total resource available : 87.2 million cu.m.

The trend in forest production is as follows:

	1976	1980
- Production of timber	369,000 cu.m. to	350,000 cu. m.
- Production of sawnwood	96,000 cu.m. to	75,000 cu.m.
- Export of timber	111,000 cu.m. to	133,000 cu.m.
- Export of sawnwood	47,000 cu.m. to	40,000 cu.m.

3. MINERAL RESOURCES

The only mineral resources currently being exploited are gold and diamond, both on small-scale.

Gold production is approx 600 kg/year and diamond production about 350,000 carats/year. Part of the diamond is cut at Bangui.

There is little control over the mining and export of these minerals and more than 50 per cent of the diamond is produced and exported illegally. Diamond is found in the secondary sandstones and is reconcentrated through erosion and alluvial deposits in rivers. The two diamond producing areas are the secondary sandstones region of Berberati in the West, and Kimberlitie pipe deposits (have not been found.

Uranium deposits discovered in the eastern part of the country (Bakouma) have not being exploited yet.

There are copper, manganese, pyrite, lignite, dolomite, kaolin, salt, gum, and phosphate shows. Prospection for petroleum is under way in the northern Lake Chad basin. The limestone deposits at Bobassa and Fatima are being prospected for the establishment of a small cement factory.

Hot springs are found in the North East and North West extremity of the country.

The local clay was used for production of bricks, but the two brick works have closed down, in spite of the very high cost of imported cement and the poor supply system.

An iron ore deposit was discovered at Bogoin, about 120 km north of Bangui with an estimated iron content of 68 per cent. There are ferroginous sand stones at Boali (hydroelectric power plant).

4. ENERGY RESOURCES

4.1 Hydroelectric power

The CAR has enormous hydroelectric power potential, especially in the basin of the river.

However, as there is only one rainy season, the discharge of the river during the dry season is very low. Thus, the development of the potential hydraulic power would necessarily require the construction of storage dams.

- There is one hydroelectric power plant at Boali, on the M'Bali river, a small tributary of the Ubangui, 90 km north-west of Bangui. As this is a run-of-river power plant, the available power is variable. The plant capacity is 18.8 MW and it supplies the Boali textile factory and the city of Bangui. During low water periods, the power falls to 4.5 mw. Development of this plant would require the construction of a storage dam upstream.

- The thermal power station at Bangui (3.14 mw) cannot meet demand during dry years when the water level is low.

- Two other sites have been studied namely the development of the Lobaye in the West (right bank tributary), which has a potential capacity of 24 MW. The second site, that of the Kembé on the Kotto river, a right bank tributary, has a potential capacity of 40 MW.

- Technical data on the prospection of possible hydroelectric power sites indicate a total capacity of more than 500 MW.

Some interesting sites exist on the Ubangui as well as on its tributaries Lobaye, M'Poko, M'bi, Pama, Mambéré, Nara, Kadéi all in the south-west and on the Ouaka, Kotto, Chinko, Ouara and M'Bomou towards Ouango and Rafai in the south-east. The major known sites are listed in the relevant chapter in the General Report.

The hydroelectric power potential of the CAR remains largely unexplored and known sites are only partly exploited. This is reflected in the existence of several thermal power stations whose imported oil consumption weighs heavily on the country's economy.

4.2. Solar energy sources

The country has substantial solar energy resources. The northern part of the country provides the best possibilities for exploitation. There is no solar energy plant in the country apart from the solar pump project at Berberati.

4.3 The known hot spring sites should be explored for possible geothermal energy production.

4.4 The climate and vegetation of the southern half of the country offer good possibilities for use of biomass. Only the timber companies use wood waste in vapour plants. It would be helpful, to introduce the use of biomass through gasification (producer gas) in the small diesel-powered thermal plants so as to cut down petroleum imports which are extremely costly, in view of the distance from the sea (dual-fuel engines).

4.5 There are substantial deposits of lignite in the Bakouma formations. The prospection for petroleum in the north has still not lead to any definite funds.

4.6 There is no heating energy economy programme:

- fuel wood is wasted as much here as everywhere else;
- the yield from the artisenal production of charcoal is low;
- exploitation of the forest destroys the uncommercialized species and the forest. And the scale of reforestation programmes is nowhere near that of the deforestation that is going on.

4.7 Conclusion

The Government of the Central African Republic is very much aware of the serious energy problem currently holding back the economic development of its country, which is already disadvantaged as a result of its land-locked position.

The Government has drawn up an economic recovery programme which includes:

1. a survey of the hydroelectric power resources in the country;
2. the immediate establishment of small hydroelectric power plants to replace the existing thermal plants and to develop electrification within the country.

The programme adopted by the Government since 1981 is as follows:

1. Emergency programme: rehabilitation of current production plants, including increase in the capacity of the Bangui thermal plant to 5 MW. The CCCE has provided CFA F 1.4 billion for this programme.

2. Rehabilitation programme: - Rehabilitation of the Boali hydroelectric power plant, at a cost of CFA F 4.2 billion.

3. Construction of a reservoir upstream at Boali or the Lobaye project, to increase the guaranteed power. Studies estimated at a cost of CFA F 18 million are in progress.

4. Construction of micro power plants to replace the thermal plants wherever possible.

5. Background studies required or in progress are:

   (a) studies for sites on the Lobaye at M'Baiki and on the Kotto (east) at Kembe;

   (b) study of all the hydro-power resources; and selection of the most appropriate sites, particularly on the Ubangui and on the Upper Sangha and undertaking feasibility studies on them;

   (c) studies on the lignites in the uraniferous zone to determine the volume of the reserves and the feasibility of establishing a thermal power plant using these lignites, for local use and for the exploitation of the uranium.

5. INFRASTRUCTURE AND EQUIPMENT

5.1 Roads

After a difficult period, the CAR has resumed the improvement of its road network, mainly in two directions:

- opening up of the country towards Cameroon, that is to say towards the trans-Cameroon railway line in the West;
- opening up of the northern part of the country and providing access toward Chad.

Some major works have been executed during the past few years: the Bangui-Sibut, the M'Baki-Bangui and the Bangui-Bossembele roads have been asphalted.

Moreover, the Public Works Department has been re-organized and re-equipped and a Road Fund set up to guarantee routine maintenance from now on. Several developments aid organizations such as the EDF, FAC, CCCE, USAID and Kuwait Fund have been involved in this effort.

Road maintenance of the entire national road network has started, with special emphasis on the Cameroon road link.

At the same time that traffic on the trans-equatorial waterway was decreasing, there was need to improve the link with Cameroon, despite the fact that rail-road transport costs were much higher than river transport costs.

5.2 Waterways

On the collapse of ATEC, the former inter-State body, each country resumed responsibility for the section of the international transport system that was due to it. Only one joint waterway maintenance service was maintained, that which the Congo and the CAR set up as a co-ordination structure (joint commission). After sharing the inland water transport fleet, the Congo established the ATC and the CAR the ACCF and the Congo now manages only the Pointe-Noire port, the Congo-Ocean railway and the Brazzaville river port.

The ACCF of the CAR was not properly managed and its facilities deteriorated while its traffic also declined. The Government embarked upon some effective measures aimed at a multi-directional revival, i.e.

- making the ACCF a semi-public enterprise (SOCATRAF).
- the ACCF became an inherited company;
- FAC, CCCE, FRG, and UNDP were requested to finance rehabilitation of equipment.

The transport fleet comprise 66 cargo barges, 29 timber barges (of which eight are flat and 21 are open) and 22 carvac barges. No data is available on barges and handling equipment.

(a) In 1981 a programme of rehabilitation of barges, push boats and cranes, financed by FAC, CCCE and the ACCF and which was to continue until 1990 was launched. An amount of CFA F 1,421.5 million was received for the period 1981-1985. The repair of barges during the period 1985-1990 will cost CFA F 1,080 million and the repair and maintenance of cranes is estimated CFA F 170 million. It is intended to approach France and the EDF for funds.

(b) The Government, ACCF and SOCATRAF are making efforts to purchase and replace equipment. Three fuel-powered tanker barges costing CFA F 827 million were purchased with funds from the CCCE and ACCF - SOCATRAF has been reinvesting about CFA F 50 million/year in the rehabilitation of navigation and port equipment and vehicles from 1982 until 1990,

(c) Between 1981 and 1982, the EDF provided funds for the port of Bangui which helped considerably in the improvement of its installations. The improvements concerned included the construction of a quay and a workyard, purchase of fire-fighting equipment, construction of access ways and installation of a 30 tonne crane, all at a cost of CFA F 582.5 million. Modernization of the shipways is now a priority.

(d) In a nutshell, the 1982-1990 programme involves CFA F 1,080 million for rehabilitation of barges, 385 million for equipment and 805 million for modernization of shipways, making a total of CFA F 2,270 million out of the total ten year requirement of CFA F 5,531 million.

These projects are of obvious priority for the land-locked country of the CAR, and ECA (Transport Decade) and the future international Commission of the Basin should assist the CAR to find the funds to implement the projects.

Projects such as these, even when they are national projects, have direct regional impact. The port equipment could be used by all the neighbouring countries, not to mention the notion of solidarity between the states, which is the very basis for co-operation within existing inter-African organizations.

Trend in inland water transport traffic (in tonnes)

1970	1971	1972	1973	1974	1975	1976	1977	1978
437,521	438,568	445,304	486,538	537,509	325,056	500,570	518,772	507,434

1979	1980	1981	1982
450,166	500,434	561,943	591,932

- The navigability of the Ubangui has deteriorated substantially in the past years, particularly during the 1982-1983 navigation season when navigation downstream from Bangui was possible for only 109 days. The hydrological data on the 1983-1984 navigation season also shows that this period will be just as bad as the previous one or even worse, since the Oubangui (and the river) are registering all-time lows.

6. CONCLUSION

The development of the Ubangui is of dual interest to the CAR:

1. Zaire wanted to construct a dam over the Ubangui, towards Mobaye, without technically associating the CAR but simply asking for the approval before starting the works (this is what motivated the three countries to establish an international Commission). This project has been stopped temporarily, since the CAR found it to be of no benefit and the works already carried out hindered navigation upstream from Mobaye:

   (a) the design of the Zaire dam blocks navigation upstream (towards Ouango);

   (b) the town of Mobaye and other villages will be inundated without any prior agreement between the two countries;

   (c) no agreements have yet been reached regarding Central Africa's share in the energy, management of the structure, navigation etc.. although the Ubangui forms a border between the two countries.

2. As a result of the current drought in sub-Saharan Africa, rainfall in the CAR has declined substantially, leading to new transport difficulties between Bangui and Brazzaville on the one hand, and between Bangui and Ouango on the other.

This tends to further aggravate the land-locked situation, of the country which stands out as its major problem.

Also, the decline in the rainfall makes supply of power (from the Boali power station) to the capital more irregular and expensive for the national economy as it has to be supplemented with thermal energy.

The need to set up an efficient inter-State co-operation body in this northern part of the basin of the river is increasingly being felt, because the resources and natural possibilities which need to be exploited, as a matter of necessity, are most often shared by at least three countries at a time.

The need for joint development of the lower basin of the Ubangui is quite obvious, in order to:

(a) improve navigability upstream and downstream for the three countries;

(b) produce the energy required for the basic development of the two countries;

(c) and perhaps also to introduce irrigated agriculture to meet the food and agro-industrial requirements of the northern part of the basin.

Annex 7.7.2

THE PEOPLE'S REPUBLIC OF THE CONGO

1. GENERAL

   1.1 Area
   1.2 Population
   1.3 Climate - vegetation

2. NATURAL RESOURCES

   2.1 Land
   2.2 Water resources
   2.3 Forests
   2.4 Animal resources
   2.5 Agricultural production
   2.6 Mineral resources

      1. General geology
      2. Deposits

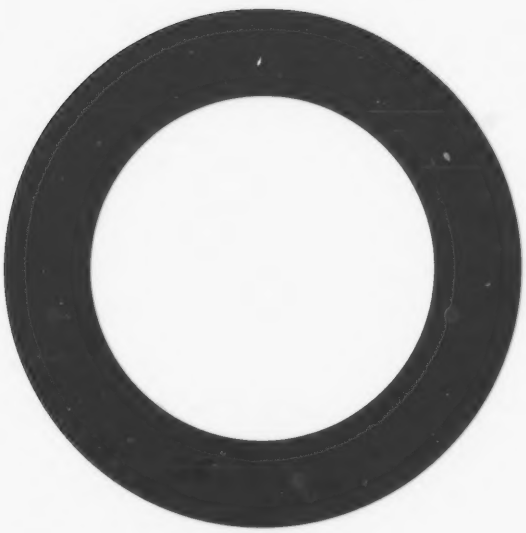
   2.7 Energy resources

3. INFRASTRUCTURE AND EQUIPMENT

   3.1 Roads
   3.2 Railways
   3.3 Waterways

4. CONCLUSION

5. ANNEXES



THE PEOPLE'S REPUBLIC OF THE CONGO

1. GENERAL

1.1 Area

Out of a total area of 342,000 km2, the basin of the Congo river covers 255,000 km2 of the pPeople's Republic of the Congo or 74.5 per cent of the country.

Only the western four provinces: Kouilou-Niari, Buenza and Lekoumou lie outside the basin. Hydrologically, these comprise of the basins of the Kouilou-Niari and the small river basins near the coast including Lo'm' - Niambo, Noumbi and the basin of Lake Tchimba.

1.2 Population

The total population of the country is 1,600,000, of which 1,007,000 or 63 per cent live in the Congo basin. The annual population growth is 2.6 per cent. Generally the country is underpopulated, with connections along the main waterways, railways and roads and uninhabited area in the interior.

The average population density is 4.7/km2 but in most of the rural areas, from where there is migration towards the cities, the population density is only 1.7 inhabitants/km2. Large areas of the territory are practically uninhabited; this is more obvious in the Likouala and Sangha provinces where the average density is less than 1 inhabitant/km2.

1.3 Climate and vegetation

Although situated on the equator, the People's Republic of the Congo has a southern equatorial climate throughout the entire teritory. The highest temperature and the highest rainfall are recorded in October and April.

Only the Niari valley, located between the Mayombe massif in the south-west and the Chaillu massif and the Batéké plateau in the north-east have rainfall of less than 1,200 mm. The highest rainfall (2,200 mm) occurs in the centre-west of the country, towards the Gabon border and north of the Batéké plateau and the Chaillu massif. In the North, south and west of these mountain ranges, the rainfall is between 1,400 mm - 2,000 mm per year, with a minimum in June, September with the extreme north, having the minimum rainfall in January and February.

Thus the northern third of the country has equatorial climate (1,600 - 1,800 mm of rainfall with no dry season); the central third has a sub-equatorial «plateau» climate (1,600 - 1,800 mm of rainfall with a 1-3 month dry season) and lower Congo, in the south and west, has 1,200 - 1,77 mm of rainfall and a 4-5 month dry season annually.

The southern part of the country, the eastern border and the northern part of the river basin in the Peoples Republic of the Congo constitute high plateaux, while the centre - north is a depression called the «Congo basin».

The river initially cuts across these high plateaux through a «corridor» and then through the «cataract zone» before entering the sea.

Half of the Congo basin is made up of flood zones and wooded marshes.

The vegetation is determined by the climate and the relief. The south and south-eastern section of the basin covered by wooded plateau savannah, with forests along the waterways. The northern half is covered by dense forest, with some steppe and unwooded marshes. Half of the forest area is a flood zone.

2. NATURAL RESOURCES

2.1 Soils

Only about 210,000 ha. is cultivated for food crops, on regular basis, by some 500,000 farmers, mainly women.

A very large cultivable land area, of at least 18 million ha. is left unutilized. The overall rate of utilization is therefore 2.5 per cent or 0.61 per cent of the total area of the country. The cultivated land area in the basin, in 1972-73, by region, was as follows:

1. Pool 44,250 ha.
2. Plateaux 20,600 ha.
3. Basin 20,000 ha.
4. Sangha 14,490 ha.
5. Likouala 6,310 ha. making a total of 105,650 ha.

Since then the cultivated areas have increased only gradually. The soils are generally of average to poor quality, but the climate and the farming techniques used may result in either improvement or deterioration of its fertility.

Most of the area is made up of hydromorphic (Congo basin) and ferralitic (plateaux) soils.

The low agricultural production is the direct result of underpopulation on the one hand, and the concentration of 2/3 of the population on 7 per cent of the land along the main railways, waterways and roads on the other.

Underpopulation and rapid urbanization are the direct consequence of the pre-colonial and colonial history.

2.2 Water resources

In addition to a good rainfall, the People's Republic of the Congo has a very dense network of waterways, with enormous discharge at high water and considerably high discharge at low water. This is analyzed in the chapter on water resources and navigable waterways in the General Report.

2.3 Forests

The country has about 17 million hectares of forest, of which 13 million ha. in the northern part is practically virgin forest. The coastal forests and those in the Chaillu mountain area are the most exploited.

2.4 Animal resources

The river and its tributaries abound in fish. The continental fishing carried out on small-scale by some 6,000 fishermen in the Congo basin is far from the full capacity.

Game reserves have been impoverished by the increasing use of fire-arms and poaching.

Animal husbandry is not yet developed. Cattle breeding which was introduced after the second world war in N'Dama and Lagune regions, has not yet produced more than 100,000 animals. Efforts are under way to develop poultry and pig breeding as well as cattle, sheep and goat ranching. The country imports meat.

The trend in livestock production from 1970 to 1980 is as follows:

Cattle	from 35,900 to	62,121
Sheep/goats	from147,000 to	220,067
Pigs	from 37,000 to	24,000
Poultry	from 575,000 to	2,697,000

Cattle breeding is concentrated mainly in the Niari valley. In the West Animal husbandry in the basin involves mainly sheep, goats and poultry.

2.5 Agricultural production

Agricultural production is low, with the exception of the production of export timber.

1. Food crop production is not high enough to meet domestic demand in the country. The trend in production from 1969 to 1978 was as follows:

- Cassava	from	448,000 T to	580,000 T
- Plantain	from	29,000 T to	34,900 T
- Yams	from	46,000 T to	12,800 T
- Sugarcane	from	4 T to	5,906 T
- Groundnuts*	from	3,030 T to	1,000 T
- Paddy rice	from	1,603 T to	880 T
- Beans	from	13 T to	65 T
- Potatoes	from	2 T to	110 T

(Ref. 1980 Statistical Yearbook - Ministry of Planning)

The share of the Basin in total production was 54 per cent. Food imports rose quickly from 44,000 T in 1960 to 106,000 T in 1980.

2. Industrial agriculture - Production in 1980 was mainly: coffee (3,355 ha., 510 T cocoa (7,747 ha., 2,113 T), tobacco (1,559 ha., 468 T), industrial cassava (state sector: 380 ha., 4,000 T), can (11.155 ha, 8,897 T), paddy rice (2,291 ha., 2,726 T), vegetables (6,102 ha., 36,612 T), fruits (7,691 ha., 38,175 T), palm-oil (State sector: 4,374 ha., 1,920 T) groundnuts (18,740 ha., 13,863 T), beans (3,242 ha., 1,297 T), plantain (7,320 ha., 55,560 T), tubers (1,287 ha., 6,435 T), potatoes (218 ha., 1,744 T).

Cocoa is produced mainly in the Sangha area (72 per cent), the Lilouala area (14 per cent) and in the Congo basin (12 per cent) whilst 60 per cent of the total coffeee production comes from the basin of the River.

It is intended, as part of the development plan, to increase the total cultivated area from 170,000 ha. (1980) to 225,000 ha. in 1986 or an increase of 26.5 per cent over 5 years.

Sugar production which was 96,000 T in 1967 was 75,900 T in 1970; it fell to 5,700 T in 1979 and rose again in 1981 to 16,000 T. Sugar is produced mainly in the Niari valley, outside the basin.

Palm-oil production fell from 3,332 T in 1970 to 1,935 T in 1980. Large scale investment in this sector is planned in the development plan to boost the production of palm oil and oil factories at Etoumbi,

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* A large proportion of the estimated production of groundnuts of 18,200 T was consumed by the producers; 9,200 T were sold.

Owando, Ouesso in the basin. There are rice mills at Ewo and Loukouo. Plans for large scale food production (coconuts, sesame, soya, tubers, corn, rice and groundnuts) have been made and financing already provided.

3. Forest production. Firewood is the major form of energy consumed. constructional timber is the second major production, after petroleum: 600,000cu.m produced in 1980, of which about half was sawed, peeled and reneered locally. Exploitation of the forest plays a major role in the development and opening up of the northern part of the country. Several big logging projects are under way jointly with Algeria, Romania etc.

Important programmes of reforestation or industrial planting of the Congolese eucalyptus are being carried out and there is a pulp and paper factory in operation (240,000 T/an).

2.6 Mineral resources

1. General geology

In the people's Republic of the Congo, the Congo river basin has the shape of a depression formed in the precambrian rocks which constitute the elevated borders in the north and north-west and form a threshold in the south. These ancient rocks were covered by tertiary and quarternary sediments of unknown deposits which were deposited in the basin.

The river Congo has dug a «Trouée Héroique» (a magnificent gap) across the upper precambrian threshold south-west of Brazzaville (the cataract zone).

There are outcrops of the oldest precambrian rock (the low precambrian), made up of igneous and metamorphic rocks, in the north-west from the intermediate precambrian (sedimentary) in the north and form the upper precambrian (sedimentary) in the south towards the cataract zone. The entire central part of the basin is thickly covered with quarternary alluvial and tertiary clayey-sandstone deposits (Batéké plateau). The secondary sandstone appear at the bottom of the river valley. The precambrian formations are sub-divided by two main glacial occurrences which produced some conglomerates (Lower Tillite and Upper Tillite).

All the known mineral deposits are in the precambrian deposits.

The sandstone and sandy tertiary formations form excellent hydrological reservoirs which naturally give some of the waterways an exceptionally regular discharge (Alima).

Best copy available

The mineral resources in these formations have not been well explored; therefore:

- prospection of the precambrian formations should be continued;

- the continental sedimentary basin of the depression should be explored. There is no data on the thickness and nature of sediments and there is a high chance that this depression will be an area of continental subsidence.

2. Deposits

The most important resource is petroleum, discovered first in 1957 on surface exploitation permit (Pointe Indienne), then off-shore (Emeraude in 1969, Loango in 1971, Likouala in 1972, Likouala Yanga Sendji in 1979) and then at Loémé, Mengo, Likouala, Liboudo, Tchendo for which evaluation and development are underway.

Production increased from 19,000 T in 1970 to 4,110,000 T in 1981.

The existing petroleum resources are outside the basin, but their economic importance for the Congo section of the basin, in terms of investments, justify their being mentioned here.

The local reserves are found at:

- Emerald	500 to 1,000	million	tons
- Likouala	31	"	"
- Loango	50 to 55	"	"
- Yanga	60	"	"
- Sendji	35	"	"

The volume of the reserves at Mango, Loémé, Likouala Yanger, Liboudo and Tchendo have not been assessed yet.

The rate of recovery ranges from 25 to 35 per cent. The technology of water vapour injection will be applied to the big, shallow, heavy oil Emeraude deposit, to liquefy the petroleum and to increase the rate of recovery.

15 million tons of petroleum have been extracted in the past ten years, or 3 per cent of the known reserves.

Without taking into account new discoveries and the possibilities for improvement of the rate of recovery, the Congo can produce 75 million tonnes or an average of 7.5 million T/annum over the next ten years. Current production is about 4.5 million T/an.

Petroleum gas from the Pointe Indienne deposit was mined to provide energy for processing potassium. The operation which consumed between 15 and 18 million m3 of gas per year was stopped at the same time as the mining of potassium. New gas deposits were discovered in 1980 at Banga (estuary of the Kouilou) and at Vandji Coukouati (Loango exploitation permit) and in 1981 at Litchendjili-Marine (250,000 m3/day + 100 m3 of gasoline per day). All these resources are used at present very little for industrial purposes; rather they are used for domestic purposes

There is a yet unexploited bitumen deposit with 4 to 5 million tons of reserves near Lake Kitina in the sandstone region containing 10 per cent bitumen. Plans are under way to exploit this deposit.

There is no mining in the basin apart from the small-scale gold washing near Kélé and M'Bomo. There were some old mines at Sembé and Souanké near the Cameroon border.

Known occurences or deposits in the basin are:

1. Diamond occurences in the extreme north, near the CAR border.

2. Iron ore deposits in the Mt. Avima and Nabela region near the Gabon and Cameroon borders. These deposits would have more than a 100 million tons of iron ore, with over 60 per cent ore content. These will be studied in a regional context by the three countries concerned.

2.7 Energy resources

1. Hydrocarbons

See Chapter 26 - the possibilities for production of electric energy from gas and petroleum are very high.

Gas can also serve as a reducing agent for metallurgy and as a basis for the nitrogen fertilizer and plastics industries which are necessary for agricultural development.

2. Biomass

As has been seen, the possibilities for production of renewable biomass are unlimited. The success of the afforestation programme involving the Congolese eucalyptus (40 tons /ha/year) further increases these possibilities.

3. Hydroelectricity

The People's Republic of the Congo has a substantial hydroelectric power potential of 24 billion kwh/an. The two biggest energy sites are the Sounda in the Kouilou basin and the Cataract zone on the river, which is common to both Congo and Zaire.

In the rest of the Congo basin, all the upper basins of the tributaries of the river have hydroelectric power sites whose energy producing capacities are enhanced by high discharge at low water. The central part of the basin has less potential for hydroelectricity. Surveys of hydroelectric power sites are not systematically conducted; studies are undertaken in accordance with district or national development requirements.

At present, there are two hydroelectric power plants:

a) on the Djoué, a tributary of the river Congo at Brazzaville, with a capacity of 15 MW and

b) on the Bouenza (Moukoukoulou), a tributary of the Niari, outside the Congo river basin, with a capacity of 75 MW.

Construction of four hydroelectric power plants are in progress or about to start at:

1. Imboulou on the Lefini, a tributary of the Congo river, 14 km from the confluence of the Lefini and Congo rivers; construction of this plant, with a capacity of 100 MW has started at a cost of CFA F 44 billion.

   Imboulou is located at 150 km from Brazzaville and the plant is being jointly constructed by the Congo andChina.

2. Kandéko on the Kandéko river, situated 30 km. from Ouesso, plant capacity is 2 MW and cost of construction is CFA F 2.5 billion.

3. Assoumoundele, outside the Congo river basin, near Sembé on a tributary of the Djaia (Ogooué basin); plant capacity is 1MW and cost of construction is CFA F 1.8 billion. The plant will supply electricity to the towns of Sembé and Souanke, which are in the basin.

4. The Adinga dam, near Etoumbi; plant capacity will be 4 MW to be installed in successive capacities of 1 MW. This plant will supply Etoumbi, M'Bomou and Kellé (exploitation of existing gold deposits). The cost of the project is CFA F 2 billion.

At present, the People's Republic of the Congo buys electricity from Zaire to complement its own production.

An important project concerning small diesel-electric power station is planned for the rural areas: 150 village plants and 47 rural plants (as well as increasing the capacity of the Pointe Noire thermal plant).

A major programme of construction of high tension wires is under way in the basin. The lines concerned are the:

- Brazzaville - Ngo - Djambala - Lekana line;
- Ngo - Gamboma - Owando - Makoua line;
- Kinshasa - Brazzaville line.

Fresh studies will be undertaken to update the previous studies on the Sounda (Kouilou) (estimated cost 50 million). A survey of hydroelectric sites undertaken and studies carried out on the prospects for electrification of the Likouala region. A study on regulating the flow of the Bouenza will also be carried out.

Finally, studies on a master plan for energy, with a general survey of all possible sites will be undertaken under the 1982-1986 five-year plan.

3. INFRASTRUCTURE AND EQUIPMENT

3.1 Roads

The Government of the People's Republic of the Congo has, for several years now, been making substantial investments towards providing access to the interior of the country.

(a) Construction of a north-south highway, along the largest distance in the country, from Brazzaville to Ouesso at the northern border is undertaken. The section of the road connecting Brazzaville to Owendo, a distance of 532 km is almost completed. The Owendo-Ouesso section is at an advanced stage of construction (318 km), thus providing 850 km of good national highway.

(b) Construction of a 125 km road perpendicular to the Ngo-Djambala road is in progress.

(c) Also, in the north, it is planned to construct feeder roads from Makoua to Etoumbi and from Ketta (near Ouesso) to Sembé, to link up to the trans-African highway towards Cameroon in the future.

(d) A road has been constructed to link the Impfondo Port on the Oubangui to Epéna in the Congo basin.

(e) The long-term plan for the country, envisages the construction of a loop parallel to the northern border, from Ouesso to Impfondo via Bomassa, Bérandjoko, Enyellé, Ibenga andBougou.

Other road projects are in progress in the parts of the country outside the basin from N'Fouati-Loutété, Bouenza-Moukoukoulou and Loudima-Sibiti.

3.2 Railways

The Peoples Republic of the Congo has started some major works on improvement of the river - sea rail link to increase the capacity of the railways from 4 to 10 million T/year. This project which is at an advanced stage of implementation consists mainly of the construction of an alternative route to the Mayombe crossing, a mountainous area where the former railway had ramps and curves which limited its capacity. The new railway will start from Bilala, near Loumbolo to the West of the country. Estimated cost of the project is CFA F 35 billion.

This project also covers purchase of rolling stock (especially traction equipment) and other equipment for the Pointe Noire port, and it will be very beneficial to the entire basin of the river, particularly the Congo, the CAR, Chad and South-east Cameroon.

3.3 Inland water transport infrastructure and equipment

(a) Evolution

Consistent efforts have been made for several years to provide port equipment.

Before 1960, only the port of Brazzaville had modern equipment, including a 350 m quay. After 1969, several ports were constructed in northern Congo: at Ouesso - Makoua, Owando and Bondji with FAC financing. A tanker wharf was built at Mossaka and a port built at Oyo (FAO); finally, construction of the Impfondo and Etoumbi ports are in progress with local financing. Extension of the Ouesso port with financing from BDEAC and the Congo will start in 1984.

The planned programme for 1983-1986 comprises the construction of the Bétou port on the Ubangui near the CAR border, the south-Boyélé port at the mouth of the Ubangui (with financing from the CCCE and BDEAC), the Okoyo port on the Alima and the Bala port (Ex. Fort Souflay) on the N'Goko.

The activities of these ports are based mainly on wood exports (timber, sawwood, peeled wood) as well as on a big palm-oil project, near Ouesso (SOFINCO), whose traffic in 1988 and 1985 is estimated at 5,300 T and 42,200 T respectively.

Large scale development of sawmilling is planned. The existing and planned sawmills are Kabo on the Upper Sangha near the Bokola border, 40 km from Ouesso, «CBO», 15 km from Ouesso, the Algeria-Congo Company on the N'Goko, the joint Libya-Congo Company further upstream on the N'Goko (sawing, peeling and production of plywood), Bayélé in the north and Bétou (in co-operation with Romania - UEB). The old timber companies are still in operation and are being developed, such as Boisanga (French) and «Congolaise Industrialle des Bois (CIB); new units will start operation in 1984, namely SCEBO (Jointly owned with Doumeng), SFNC (French) and «Tropicbois».

The substantial investment in the forestry indusry, is the main immediate economic justification for the current investment in port and railway infrastructure.

Development of the main port of Brazzaville followed an increase in traffic: the floating timber port was constructed in 1970, with financing from FAC, but because of th calm waters, the port silts up and it can be used only a few months in a year (at high water). In 1971, the «Agence Transcongolaise des Communication (ATC) financed construction of a 92 m of quay and purchase of one 30 T crane; in 1976 the EDF financed 25 m of quay, one 30 T crane, three 6T cranes and two 2,600 m2 warehouses. Emphasis in the future will be placed on development of timber and container traffic. ATC which manages the Pointe-Noire railway - port - river transport network has plans for a corresponding equipment programme. The BDEAC has been requested to finance a container for the Bangui traffic in 1984, and a new timber port, more easily accessible all year round, is to be constructed.

(a) Description of the present status of infrastructure, equipment and traffic

The "Agence Transcongolaise des Communications" is responsible for managing all the river ports and all domestic inland water transport. Under its agreement with the CAR, it also has 20 per cent share in CAR's international traffic plus all the traffic to and from south-east Cameroon.

The present status of ports, the fleet and traffic is as follows:

1. Ports

1.1 The Port of Brazzaville

The Port of Brazzaville is one of the major links in ATC's transport network. It is the connecting point between the railway (CFCO) and the river network serving the northern part of the People's Republic of the Congo, the Central African Republic,, South-eastern Cameroon, southern Chad and the Republic of Zaire.

Administratively, the port is a unit of the Department of navigable water ways, ports and inland water transport, within the framework of the ATC.

The inland water transport department of the ATC also undertakes lighterage activities, except for timber, which has been carried out by private lighterage contractors, SOAEM and PONTECO since 1 August 1973.

The port area extends eastwards from Brazzaville over a narrow stretch along the bank of the river for a distance of about 4,400 m.

There are two distinct ports areas, separated from each other:

(a) the public port area;

(b) the timber port area.

(a) The public port

The Brazzaville public port covers an area of about 55 ha and is being developed northwards of the Brazzaville Chamber of Commerce over a distance of approx. 3,200 m (cf. plan).

The port installations stretch over a distance of 1,415 metres of berthing area and comprise:

- a 870 m zone with cranes
- a 40 m. tanker pier
- a 230 m dry wall
- a 275 m service berth

(b) Timber port

The Brazzaville timber port and its railway installations cover an area of 16 ha. and is developing northwards from Pointe-Lopez up to the «Congolaise Industrielle des Bois» (CIB) sawmills.

The installations at the timber port include:

- 245 m of quay with 20 ton cranes;
- 25,000 m2 of constructed and fully equipped platforms.

1.2 The ports of northern Congo

The existing ports are:

- The Ouesso port:

Situated on the Sangha, it has:

. a 60 m quay with 2 cranes;

. two warehouses;

. constructed and fully equipped platforms.

- The port of Mossaka

Situated at the confluence of the Sangha and the Congo river, it has:

. a 60 m quay with 2 cranes
. one warehouse;
. one passenger terminal and one landing stage;
. constructed and fully equipped platforms.

- The ports of Makoua, Loundji and Owando

Situated on the Likoula - Mossaka, Alima andKouyou respectively, each of them has:

. a 30 to 45 m long quay;
. one warehouse;
. fully equipped platforms.

- The port of Oyo

Situated on the Alima, it has:

. a 60 m quay with a crane;
. one warehouse;
. one passenger terminal;
. staff quarters.

- The port of Imfondo (under construction)

Situated on the Ubangui, it will have:

. a 60 m quay with an 8 m high 6 T crane,
. a 40 m ramp for unloading passengers and heavy parcels;
. one warehouse;
. one passenger terminal;
. fully equipped platforms
. staff quarters.

- The port of Etoumbi (under construction)

Situated on the Likouala-Mossaka, it will have:

. a 50 m quay with an 8 m high 6 T crane;
. a passenger landing stage;
. one warehouse;
. one passenger terminal;
. fully equipped platforms;
. staff quarters.

- Extension of the Ouesso Port (invitations for tender being made)

The port will have:

. a 60 m quay;
. a passenger terminal;
. a passenger landing stage;
. fully equipped platforms;
. an 8 m high 25 tonne crane;
. port handling equipment.

Planned top priority projects are:

- The ports of Bétou and Dongou on the Ubangui;
- The port of Okoyo on the Alima;
- The port of Ngabala on the Ngoko,

and those planned as second priority are:

- The ports of Ngobe, Mpouya, Lukulola and Makotimpoko on the Congo;
- Extension of the Mossaka port;
- Extension of the Boundji port

2. Inland water transport

The MTC's transport fleet currently comprises:

- Passenger transport units

. a 100-bunk passenger boat;
. 2 passenger barges with 132 bunks each;

. one 40-bank barge;

. Three obsolete barges equipped for temporary use by passengers;

. four passenger barges with 20 tonne barges;

. two «Cuvette» type passenger barge trains.

- Motive engines (cargo)

. Three push boats;

. 19 wagon pinch bars;

. 45 micro-pushers for raft traffic.

- Transporters (cargo)

. Thirty-eight 50 to 600 tonne general cargo barges;

. Seventeen 250 tonne timber barges;

. Nine 300 tonne timber barges;

. Three timber pantoons;

. Six cargo barges with a total capacity of 1,075 m3.

Also, the inland water transport section has its own boatyards at the Brazzaville, Ouesso and Mossaka boses, which undertake:

- maintenance and major repair of all the inland water transport fleet;
- construction and assembly of new inland water transport vessels;
- port maintenance of the fleet of private clients and equipment and buildings of the section.

The programme of investment in inland water transport equipment is as follows:

- The additional equipment to be purchased and put into operation in 1983 were:

. two 400 HP push boats;

. one 800 HP passenger boat;

. ten 300 T barges;

. two 200 T mixed barges (hydrocarbons and sawwood).

Plans for 1984 included purchase and operation of:

. one 800 HP passenger boat - presidential boat;

. two mixed barges (hydrocarbons and sawwood);

. two passenger barge trains for the basin each comprising one push boat and two 30 bunk barges.

- Plans for 1985 included purchase and putting into service of:
  - one 160 bunk passenger push boat;
  - one 300 HP push boat;
  - one 400 HP push boat;
  - eight 200 T barges.
- The purchase at the end of 1984 and 1983 of eight 300 T timber barges and two 300 T Ro-Ro barges was negotiated with the IBRD. Financing for six 300 T barges and one 400 HP push boat is also being sought from the KFW (Kredit für Wiederaufbon)

The 1985-1987 programme concerns mainly equipment for transporting timber (9 micro push boats, seven 400 HP push boats, thirty-eight 300 T barges) or alternatively five micro push boats, nine 300 T barges and two 400 HP push boats, depending on the development of forest production and the construction of new naval yards. This programme does not include equipment for transporting the cargo of the SOFINCO oil mill and the Oyo clinker grinding factory.

3. River traffic

The 1970-1980 traffic results show that after a steep rise in traffic between 1970 and 1974, there was a marked decline in traffic in 1976, as a result of the impact of the economic crisis on wood, after which the traffic stabilized at a fairly high level between 1976 and 1980. Fresh investments in the forest and agro-industries and the several development projects included in the National Plan give hope of high increases in the traffic in the future (cf. World Bank project).

Traffic between 1970 and 1982 (Brazzaville port)

	1970	1972	1974	1976	1978	1980	1982
	101,796	263,014	52,634	212,364	219,461	244.626	206,689
	20,501	50,540	32,264	66,119	63,119	67,491	56,558
	20,755	40,222	20,805	30,853	29,006	30,948	46,205
	52,366	30,350	30,057	29,842	12,768	12,464	9,305
	10	16,500	53,970	29,700	9,585	38,700	99,025
Coffee/cocoa	14,689	10,439	13,918	12,702	4,444	3,034	2,459
Miscellaneous	12,918	9,037	12,026	8,935	9,034	7,986	10,211
Total	223,056	410,110	195,754	391,250	347,417	413,249	432,448
Hydrocarbons		62,623	55,746	42,978	38,164	35,772	21,903
Miscellaneous	141,026	64,776	73,556	86,342	64,585	51,413	66,549
Total	214,406	127,309	129,302	109,320	102,749	87,185	88,452
Grand total	437,529	537,509	325,058	500,570	450,166	500,434	520,890

Waterways

1. For description of waterways and conditions of navigability, see General Report.

2. Waterways management structures

A joint Congo/CAR body, the "Service Commun d'Entretien des Voies Navigables (SCEVN)" is responsible for maintenance, buoyage, studies and improvement of the waterways. The activities of this body are described in the General Report.

3. Major works being carried out in the Congo section of the river network.

In addition to the annual routine buoyage readjusting carried out at medium and low water, and the minor work of improvement of sandy and rocky sills, undertaken by direct labour by the SCEVN, the People's Republic of the Congo, with local and world Bank financing, also undertakes studies and some pilot projects relating to construction of «castor dams» on the Sangha. The objective of these pilot projects is to

improve the navigability of the river and also to have the economical 1.30 m draught for as many months a year as possible. This project does not include the Upper Sangha. The technology consists in blocking the secondary arms of the minor bed of the river so as to concentrate the discharge on the main arm.

The dams are built with full-length, tied with cables and firmly anchored on the banks. The slowdown of the discharge and speed of the water as it filters through the obstruction diverts the water into and increases the discharge in the unblocked arm selected for navigation. Gradually, alluvial deposits increase the blockage in the blocked arm. It is sometimes necessary to speed up sedimentation by filling up with the pump dredger. Three pilot-dams have been constructed on trial basis. The full programme comprises construction of 21 dams, all on the Lower Sangha, at a fairly considerable cost. This technique of national channel improvement, in no way affects the Upper Sangha and N'Goko.

However, it is not known as to what will happen to the expected results if the drought currently affecting the continent persists (as it probable will persist).

Conclusion

1. The Transport system, as it exists in the Congo now - port - rail - river, is adequate for movement of the present and expected future traffic;;

2. The efforts under way to improve the two modes of tranpport and the ports, will help increase their capacity further.

   In its efforts to develop the transport system, the Congo Government takes into account the needs of the land-locked countries which use the network (CAR, Chad), development of the traffic of Cameroon, as well as the traffic generated from its own activities.

3. The People's Republic of the Congo is very interested in improving the navigability of the Ubangui and the Sangha, in order to obtain an all-year draught of 1.30 m, which will considerably raise the profitability of present operations. The profitability threshold is 1.10 m draught.

   The People's Republic of the Congo has already commenced action, with the World Bank, to improve the Lower Sangha.

   The drastic and very substantial fall in the low water level in the Ubangui, during the past and present seasons is very worrying having drastically reduced the profitability of inland water transport.

4. The People's Republic of the Congo is convinced of the need for wider co-operation aimed at finding a final solution to the development of the Oubangui and the Sangha.

The existing CAR/Congo co-operation body is working very well and is correctly fulfilling its mission of undertaking routine maintenance of the buoyage and providing information (on the rise in the water level from Kemba, the most upstream station) which is of crucial importance downsteam.

This organization has continued its sill improvement activities, together with readjusting of buoys in accordance with the changes in the river bed, as well as dredging and sill excavation.

The intervention of the World Bank on the Sangha introduced a new method whose first concrete trial yielded some positive though limited results (castor dams).

5. As regards the river Ubangui and the river Sangha transport routes, the SCEVN, the joint Congo/CAR joint establishment has clearly indicated that a) it is the best technical and scientific body; and that b) it is fairly well equipped and organized to carry out its present duties and to serve as a basis for future joint action.

Annex 7.7.3

REPUBLIC OF ZAIRE

CONTENTS

1. GENERAL

1.1 Area
1.2 Population
1.3 Climate - Vegetation

2. NATURAL RESOURCES

2.1 Land
2.2 Water resources
2.3 Rural production

- Agriculture
- Animal husbandry
- Forest
- Fishing

2.4 Mineral resources

- General geology
- Mineral deposits

2.5 Energy resources

- hydroelectric
- Biomass
- Fossil

3. TRANSPORT INFRASTRUCTURE

4. ANNEXES

- Diagram of transport routes - IBRD - 1341
- Diagram of rural production IBRD

REPUBLIC OF ZAIRE

1. GENERAL

1.1 Area

The Republic of Zaire is the third biggest country in the continent. It covers an area of 2,345,409 km2, which is almost entirely within the basin of the River Zaire (Congo). The only parts of the Zairian teritory that is outside the basin are:

(a) West of the drainage basins of Lakes Mobutu gese Seko and Idi Amin representing about 30,000 km2, of the Kivu region;

(b) A small area along the Cabinda border, in the extreme west of the country, representing about 5,000 km2 of Lower-Zaire. These two areas make up only 1.5 per cent of the total area of Zaire, thus leaving 98.5 per cent of the country in the basin..

1.2 Population

The 30,000 km2 Kivu area outside the basin has very high population densities. About 50 per cent of the area has densities of 20 to 40 inhabitants/km2, 40 per cent between 50 and 100 inhabitants/km2. The population density on the small area along the Cabinda border has similar population densities. This means that about 1,700,000 inhabitants are outside the basin, leaving about 94 per cent of the population of Zaire in the basin.

The forested central basin is very very sparsely populated. Population densities in the 250 km2 east-west stretch of land along latitude 3° south, as well as on the east, south and north of Kisangani have less than 1 inhabitant/km2. Densities in the rest of the central basin scarcely exceed 5 inhabitants/km2.

The moderately populated areas are:

- A 1,250 km strip of land stretching east-west from the Atlantic to Buji-Mayi in the centre south, between latitudes 4 and 7 degrees south. This area has mixed forests, - arid zones -aas well as savannahs.

- An 800 km long north-south strip of land along the eastern border, between latitudes 4°N and 4°S, which constitute the foothills of the Rift Valley. The climate and vegetation vary in accordance with the altitude, and volcanic activity in the area has produced some rich soils.

- the waterways of the Zaire up to Kisangani and the Ubangui and its tributaries up to the north-eastern border constitute a third moderately populated area between 3 to 9 inhabitants/km2: the central interfluve is however almost uninhabited

- Population densities are very high in the towns of Lubumbashi and Kolwezi in the south-east, Kananga, Suji-Mayi and Kabinda in the centre-south. Kinshasa and Boma intthe west, M'Bandaka in the west and Kisangani in the centre-east below the Equator and with Kivu region (Bukavu, Goma etc) in the east.

In short, the main feature of Zaire is its relative under-population (12 inhabitants/km2) compared to its economic potential.

Annual population growth is 2.6 per cent, with a high mortality rate brought about by the climate and the standard of living.

Urbanization, at the expense of the rural populations and production, is creating severe problems for the country, accentuating the food deficit and increasing the cost to the state in supplying the urban areas with food and providing the social facilities required by urban areas. The rural-urban gap is on the increase since 30 per cent of the total population is now in the urban areas.

1.3 Climate - vegetation

Reference should be made to the chapter in the General report on the climate in the basin.

1. The central part of the basin from Akoti to Kindu has equatorial climate, with rainfall all-year round and a minimum in January. The dry season lasts less than a month. Another smaller, purely equatorial zone, is found in the north-east region between Bambessa and the Blue mountains. The rainfall here is more than 1,800 mm.

2. The tropical climate is found on both sizes of the equatorial climate. The dry season gets longer towards the extreme south and the extreme north, lasting from 2-3 months (at Kindu and Bambessa) to 3-4 months. The rainfall varies in a similar pattern between 1,800 mm to 1,200 mm.

3. The south-east has tropical dry climate with drier conditions in the high plateaux where the rainfall ranges from 1,200 mm to less than 1,200 mm and the dry season lasts 5 months.

4. From the north of Lake Tanganyika up to Lake Mobutu different types of mountain climate are experienced over a 100 km wide area along the border. Up to the summit of the Ruwenzori and the Virunga, which are more than 4,000 - 5,000 mm high (glaciers), the altitude gradually reduces the temperature and the atmospheric humidity.

5. The climate of the western corridor is influenced by the Benguela current, which gives a succession of climates from the Atlantic Coast (less than 1,200 mm of rainfall) to Kinshasa (1,800 mm of rainfall).

Vegetation: The central basin is a 750.000 km2 depression, with altitudes varying between 340 m (Lakes Tumba and Maindombé) and 700 m in the north (Uele). The central basin and the surrounding plateaux are covered by dense forest, up to the foot of the mountains on the eastern side. Half of the forest in the lowest central parts is marshy.

- Both northwards and sourth wards of this basin plateaux rise gradually; the dense forest changes into wooded savannah, with all sorts of intermediaries, and then changes into tropical savannah with steppe on the Kalahari soils (East and south-east of Kinshasa and towards the Angola border).

- On the eastern mountains are humid mountain forest, surrounded by high wooded areas.

2. NATURAL RESOURCES

2.1 Land resources

The exploitable land resource of Zaire is estimated at a minimum of 70-80 million ha. of which 4 million is exploited. Of this 2.5 million ha. is pasture or fallow land, or a total of only 3-4 per cent of the total area of the country.

The best soils are those in the volcanic and the mountainous zones along the eastern border (volcanic soils, black soils and brown soil on alluvial); and

Along the waterways, in the lowest part of the central basin and in the lake and marshy areas of the south-east, it is the hydromorphic soils which are predominant.

Zaire therefore has enormous potential for agricultural and pastoral production. However, the soils are most often of poor and fragile quality, which makes the use of fertilizer and improvement and conservation techniques necessary, particularly on the sandy soils which cover more than a fourth of the country.

The clearing of the forest by eliminating or cutting down growth of new organic and mineral forest plants impoverishes the soil which is then quickly destroyed when cultivated.

2.2 Water resources

There are enormous surface and subterranean water resources, well distributed in time and space which substantially enhances agricultural and hydro-power production.

The water balance of the basin gives a comprehensive but clear idea of the importance of these resources (see general report).

2.3 Agricultural production

The trend in the production of the main agricultural commodities was as follows: (in 1,000 tons)

Year	1966	1968	1970	1972	1974	1976	1978
Corn	270	361	330	433	48	50	50
Rice	91	140	172	206	201	213	213
Cassava	8,753	10,772	9,475	9,917	12,013	n.a.	11,779
Vegetables	80	83	125	168	166	n.a.	n.a.
Fish	-	-	-	-	115	108	n.a.
Meat	-	-	-	-	49	51	n.a.
Cotton seed	-	-	-	-	49	24	16
Sugar	-	-	-	-	63	46	48
Timber m3	-	-	-	-	400,000	400,000	350,000
Palmoil	125	206	203	142	258	249	n.a.
Coffee	30	46	58	67	77	92	77
Tea	6	5	7	8	6.7	n.a.	3.8
Plantain	464	881	889	897	-	-	-
Ground nut	149	379	180	254	-	-	-

Overall, agricultural production is not increasing as fast as the population, whose rapid rate of urbanization has lead to increase in food imports and a reduction in exports.

The Government's economic revival efforts relate mainly to increasing rural food and agro-industrial pro-uction and improving the transport routes which are of crucial importance in this semi-land-locked country with enormous transport distances between places within the country (2,100 km from East-West and from North-South). It is difficult to evacuate the surplus food produced in the eastern and central central parts to the urban and industrial centres in the West and South. Current imports of corn is about 200,000 T/year, rice 70,000 T/year, sugar 15,000 T/year, beef 19,000 T/year and flour 123,000 T/year.

Animal husbandry

Natural conditions in most of the country are unfavourable for cattle breading (humidity, sleeping sickness).

The cattle is concentrated mostly in the mountainous and high plateaux areas of the south-east and east, where they were introduced several centuries ago by Hamite shepherds.

The Belgian colonialists introduced trypanotolerant breeds (N'Dama and Lagune) and developed extensive savannah ranching: 30,000 heads on 100,000 ha. is lower-Zaire, Kananga and southern Shaba.

Poultry, pigs and sheep are raised traditionally in the villages in partial restraint.

The total number of livestock in the country is not enough for the size of the population and there is considerable room for development. The livestock available in 1972 was as follows:

- cattle	approx	1,000,000	heads
- sheep	"	700,000	"
- goats	"	2,000,000	"
- pigs	"	528,000	"
- poultry	"	6,900,000	"

There is very little relationship between agriculture and animal husbandry since agriculture is mainly manual and does not use animal draught power. Very little animal manure is used.

Fishing

Continental fishing is active in the basin and towards Kisangani (traditional fishing), and in the Great Lakes (Mobutu, Idi Amin, Kivu, Tanganyika, Moero, Lufira and Upemba) where it is practised on semi-industrial basis (fishing lamps at night).

Total continental fishing production is between 100,000 to 150,000 T/yr with a canoe fleet of some 40,000 units.

Sea fishing does not yield much, only between 10,000 and 15,000 T/year mostly consumed at Kinshasa. PEMARZA (the Zairian sea fishing company) has about a dozen trawlers. On the whole, fish rather than beef constitutes the main source of protein for the rural population.

The fishery potential, both continental and marine, remains largely unexploited.

Some fishery development programmes are in progress: fish breeding is being developed, as well as improvementof catching and smoking techniques and organization of marketing and conservation channels.

Forests

The forest covers almost half of the country and accounts for 6.5 per cent of world forest country in the world. The area near the coast is completely devoidof its forest (Mayombe), while the central basin, with 60 per cent of the reserves has almost virgin forest.

Timber production, which ranges between 350,000 to 400,000 cu.m/yr is low compared to the available resources. In 1980 production fell to 290,000 cu.m. This was due to the Government's wish to enhance the value of the production, at least at the initial stage by sawing and veneering of the wood, obsolescence of the firms, the transport difficulties which existed before (river, rail,road)and are now being solved with substantial investments by the World Bank and other donors in ONATRA' SNCZ AND RVF, and the lack of enthusiasm on the part of investors.

The forestry potential of the country is estimated at 120 million ha. of which the 100 million ha. is in the central basin constitute the richest and most exploitable virgin forest in the world. Its production capacity is estimated at330 cu.m/ha and it has 20 exploitable species.

Outside the central basin, exploitation of the forest is mainly for firewood and charcoal, which is estimated at between 9 to 13 million cu.m/yr.

2.4 Mineral resources

1. General geology

The old azoic granito-gneissic shelf is covered by unconformable strata of primary, secondary and tertiary sedimentary deposits.

1.1 The old shelf is loosely made up of two shields, in the north (Boma - Garamba) and in the south and south-east (Kassai and East Shaba), which served as the basement.

1.2 There used to be depressions zones between the two shields in which thick layers of metamorphic sediments resulting from tectonic upheavals accumulated: this produced the lower precambrian which appear as outcrops in the south (Lualaba) in the east (North Shaba, Maniema, Kivu, Kibali-Ituri, Uele) and in the West (Mayombe): the Ruzisien, Kibali and pre-mayombian rock date from -2.5 to -1.9 billion years.

Overlying the lower precambrian is the middle precambrian which produced accumulations of detrital deposits due to severe erosion. These deposits were compressed into deep folds (Kibarian, Burundian, Mayumbian, Likobambian) (-1.3 billion years ago), as well as formation of the Kivu and shaba mineral deposits (tin and related metals), the Kilo-Moto gold concentrations and the Mbuji-Mayi diamond deposits etc. These formations occur mostly in the south-east and in the north-west.

In the upper precambrian, thick sedimentary series with enormous quantities of copper are deposited in the Shaba fault. Sedimentary series are also deposited between the two shields north and south at the current site of the central basin and towards the west along the present banks of the Atlantic. In an orogenic process over -645 million years (Katinga folds) these formations were levelled off to produce Appalachian type mountains containing the Shaba deposits where copper, lead, Zinc and Cobalt are mined. The same geological sequence occurs in Lower Zaire where the same Appalachian type of mountains are found.

The primary (carboniferous) and secondary (Trias Jurassic, Cretaceous) sediments are deposited on these ancient, hardered, more or less stabilized formations, giving the effect of a general central subsidence which incurvates the shelf in a bowl-shaped manner.

Coal is deposited on the carboniferous rock (Lukuga, Luena, the Jurassic crops out mostly in the valleys of the Lualaba and Lomani rivers and contain enormous deposits of oil shale. Petroleum, salt and potassium occur in the marine cretaceous rocks along the Atlantic ocast. A general peneplain marks the end of the cretaceous rocks.

Warping of the tertiary platform is continuing and the edges are being raised, with the result that erosion has set in and a new peneplain is being formed in the middle. Arid conditions in the south-west and south-centre and creating sandy formations (sand from the Kalahari). In the east, tectonic occurences have produced enormous faults and several violent volcanic eruptions (area of Lake Kivu, Virunga) which are still unstable these days.

The quarternary rocks, like in all other areas of Africa, are characterized by a sucession of humid and dry periods during which continental sand is deposited in the basin (Yangambi series while variations in the sea level create terraces and cliffs (moanda) at the coast.

The geological and tectonic history therefore clearly explains the structure of the river network: the plateaux and mountains of the west have, for a long time, blocked the river waters which then diverted into an inland freshwater lake which finally created a

channel through the western mountains into the sea. The numerous waterfalls and rapids on the rivers are also due to the geological history (faults, varying hardness of the rocks, alluvia deposits etc.) of the area.

2. Mineral deposits

The main mineral district is Shaba in the south-eastern part of the country. This region has coal, copper, lead, zinc, tin, manganese, uranium, gold, and cement limestone.

The second most important region is the coastal region with petroleum, potassium, salt and gold; the third region, the Kisengi-Tshipaka-Muji Baui-Luebo region, with gold, diamond and iron and the fourth region the north-east and centre east regions, with mainly gold and iron.

The large bitumen schist deposits in the Kisangani area (Lomani and Lualaba) will become important in the future. Three quarters of the minerals are produced from weathered ore deposits with a quarter being mined underground.

Mineral production in Zaire accounts for 85 per cent of the national income. Zaire is the world's major producer of industrial diamond and cobalt and the sixth largest producer of copper. It has 40 per cent of the current known reserves of industrial diamond and 50 per cent of the known cobalt reserves. Its copper reserves account for 6 per cent of the world reserves although the content is above the world average.

Zaire's mineral production is roughly as follows:

Luena (Bukama, Lukuga, Kalemie) coal	140,000 T/yr
Shaba, copper metal	460,000 T/yr
Shaba, zinc metal	70,000 T/yr
Shaba, cobalt	13,000 T/yr
Kilo-Noto, Shaba - gold	1,500 kg/yr
silver	77 kg/yr
Monono, Kalemie, Kivu, tin	5,300 T/yr
Kisenge - manganese 1/	180,000 - 200,000 T/yr
Bakwanga - industrial diamond	11 million carats
Tshikapa, Mbuji-Mayi - jewellery diamond	300,000 carats/yr
Wolframite	440 T/yr
Monazite	125 T/yr
Colombo - Tontalite	80 T/yr
Petroleum	8 - 10 million barrels/yr.

1/ Manganese production was stopped for a long time due to the closure of the Benguela railway, the only economic transport route for this product. Production has now started on a small scale.

Coal production is insufficient in quantity and in quality and supplements are imported from Zambia.

The iron ore, bauxite, phosphate, potassium and salt deposits are not yet exploited. The Inga project offers new prospects for exploitation and processing of the iron, bauxite-aluminium and fertilizers (phosphates, potassium and nitrogen) which the countries have great need of.

The strong dependence of the country on the world copper and cobalt prices constitutes a major handicap for the economy.

2.5 Energy resources

1. Electric energy

The hydroelectric power potential of the country is about 100,000 mw or 13 per cent of the world potential.

Current electric energy production is 4000 Gigawatheours (Gwh) or less than 1 per cent of the capacity.

The total capacity of the Inga project will be 39,000 MW of which 750 MW (52 turbines) has already been developed in three stages:

- Inga 1: 350 MW, with 6 58.5 MW turbines;
- Inga 2: 1,272 MW, with eight 159 MW turbines; and
- Inga 3: 1,200 MW or a total installed capacity of 3,822 MW.

These first three installed plants, which are run-off river plants, will be followed by a fourth plant, Inga 4, with a capacity of 2,350 MW produced by ten 235 MW turbines under a 50 m fall; a dam will be built on the river itself. In a final stage, a dam will be constructed on the Bundi (lateral valley) which will push the total capacity to 39,670

A 1,700 km long 500 kv continuous current double transport line transports the energy from Inga to the Shaba mining and metallurgical district via Kikwit and Kananga. It is planned to install 560 mw, 840 mw and 1,120 mw converters respectively in the first three stages.

All the existing hydroelectric power structures are listed in the general report. The major structures, apart from the Inga plant are found in the south-east and the east and include Nzeke, Nzilo, Mwadingusha and Koni in the Shaba district. (see annexes).

Among the possible hydroelectric power sites, those which are more or less known are the following:

List of potential hydroelectric power sites in Zaire

Region	River	Name	Head (m)	Discharge (m3/s)	Capacity (mw)
Lower Zaire	River Zaire	Inga II	56.20	2,200	1,400,00
		Inga III	60.50	5,500	3,000.00
		Grand Inga	150.00		39,000.00
	Inkisi	Zongo II			
	Luasi	Gombe-Matadi	10.00	2.20	0.17
Shaba	River Zaire	Busanga			220.00
	Kiymbi	Kendera			20.00
	(up stream lake)	Mambalima			
	Luba	Kanama-Luba			2.25
	Mwanzala-Lut	Mwanzale-Lut			0.75
Kivu	Buzizi	Panzi		66.00	36.00
	Buzizi	Kitimba			33.60
	Buzizi	Kamanyola			240.00
	Luberizi	Luberizi	29.00	1.50	0.33
	Mutambala	Malitchia	6.50	11.20	0.58
		Kiringye			0.20
	Kiliba	Kiliba	545.00	2.00	15.00
	Luhulu	Mugomba	140.00	16.60	18.50
	Lubero	Lubero	45,00	2.50	1.70
	Musosa	Itav-Butembo	7.60	1.50	0.09
	Semliki	Semliki	20.00	23.00	28.00
	Butawo	Ruwenzori I	180.00	3.10	6.00
	Lusilube	Ruwenzori II	180.00	2.50	6.00
	Luhulu	Kisalala	175.00	3.10	5.00
	Musosa	Ivugha	60.00		2.00
	Rutshuru	Rutshuru	23.00	14.00	2.57
	Fuku-Fuku	Rutshuru F	25.00	1.40	0.28
	Ulindi	Mwenga	30.00	27.50	6.60
	Talya-Sud	Mubuma	280.00	8.10	25.00
	Mweso	Ngingwe	15.00	18.00	2.16
	Mweso	Binza	25.00	12.00	2.56
	Myakisuma	Myakisuma	172.00	0.50	0.68
	Osso	Osso	10.00	17.20	1.37
Upper Zaire	Tshopo	Tshopo II			13.60
	River Zaire	Pt. Wagenia			37.60
	River Zaire	Wagenia)			
	River Zaire	Manie Rukula)			2,400.00
	River Zaire	Mutshangani)			
	Kibali	Dungu			1.50
	Tse	Fataki			0.40
	Lubilu	Gubilu		20.00	
	Lindi	Bengamisa	12.00	500.00	48.00

List of potential hydroelectric power sites in Zaire

Region	River	Name	Head (m)	Discharge (m3/s)	Capacity (mw)
Eastern Kasai	Lubilashi	Tshala II			11.70
	Lubilashi	Young II			
	Mbujimayi	Katabaye	13.00	126.00	13.91
	Luilu	Kafunbu	10.05	92.013	7.39
	Katsha	Katsha	17.14	0.56	0.07
	Muovo	Muovo	20.00	2.92	0.46
Western Kasai	Lulua	Dumbo	7.00	250.00	12.00
	Lulua	Katende I		350.00	17.00
	Lulua	Katende II		350.00	30.00
	Tshibashi	Tshibashi	4.00	5.00	0.16
	Miao	Tshibwayi	4.26	66.50	2.26
	Kaluebo	Kaluebo			
	Luekeshi	Luekeshi			
Equateur	Ubangui	Mobayo	5.00		26.40
Bandundu	Wansa	Kapanga	2.00	300.00	4.80

State-owned hydroelectric power plants managed by the National Electricity Company

Hydroelectric installations					Diesel installations		
Name	Location	Unit No.	Capacity (mw)	Year installed	Name	Capacity (mw)	Year installed
Lower Zaire							
Mpozo	Mpozo	1	2.2	1934	Tshela	0.3	1971
Sanga	Sanga	1	2	1932	Meanda	2.5	1957-58
		2	2	1932	Lukula	0.3	1965-70
		3	3	1932	Lemba	1.3	"
		4	2	1947			
		5	2	1948			
		6	2	1949			
Zongo	Zongo	1	15	1955			
		2	15	1956			
		3	15	1957			
		4	15	1965			
		5	15	1965			
Inga I	Inga	1	58	1972			
		2	58	1972			
		3	58	1973			
		4	58	1973			
		5	58	1974			
		6	58	1974			
	Total		437			4.4	
Shaba							
Nseke	Nseke	1	60	1956	Kamina	0.4	1952
		2	60	1956	Kaniama	0.5	-
		3	60	1957	Kabalo	0.4	1976
		4	60	1957	Kasenga	0.2	-
					Kongolo	1.0	1978
Nzilo	Nzilo	1	30	1953			
		2	30	1953			
		3	30	1954			
		4	30	1954			
Mwandingusha	Mwandingusha	1	11	1930			
		2	11	1930			
		3	11	1930			
		4	12	1937			
		5	12	1938			
		6	12	1954			

State-owned hydroelectric power plants managed by the National Electricity Company

	Hydroelectric power installations				Diesel installations		
Name	Location	Unit No.	Capacity (mw)	Year installed	Name	Capacity (mw)	Year Installed
Koni		1	14	1950			
		2	14	1950			
		3	14	1950			
	Total		489			2.5	
Kivu							
Kiymbi		2	18				
Rizizi	Bukava	1	6.3	1958	Butembo	0.3	1969-71
		2	6.3	1958	Kasongo	0.6	1970
		3	7.8	1972	Goma	1.2	1972
		4	7.8	1972	Kindu	1.2	1955
	Total		28.2			3.3	
Upper Zaire							
Tshope	Kingangani	1	9	1955	Kisanagani	12.8	1975
		2	9	1955	Buta	.6	1971
	Total		18			13.4	
Kassai w and e					Kananga	5.0	1969
					Mbuji-Mayi	12.8	1973
					Mweka	0.4	
					Kabinda	0.7	1975
					Lusambo	4.2	1969-70
	Total					23.1	
Equateur					Bandaka	4.2	1969-71
					Bumba	1.0	1969-78
					Lisala	0.5	1970-77
					Boende	0.3	1970
					Basankusu	0.2	1970
					Gbadolite	1.8	1970
					Gemena	1.1	1968-76
					Libenge	0.8	1977
					Bongu	0.3	1971-77
	Total					10.2	
Badundu					Kitwit	1.0	1954-72
					Bandundu	0.7	1975-76
					Imongo	0.5	1969-78
	Total					2.2	

Private-owned hydroelectric power plants in Zaire

Region	Name	Owner	Year installed	Company
Shaba	Kilubi (1)	P.A.Z.		9.90
	Piana-Mwanga	Zaire-Etain	1932	29.80
	Kalule	Cimshaba	1923	4.00
	Dikolongo	Cimshaba	1951	2+20
	Mbala	E.M.Z.	1937	0.32
Kivu	Ambwe	Sominki	1955	2.30
	Belia	Sominki		2.00
	Kalima I	Sominki	1943	3.10
	Kalima II	Sominki	1952	3.30
	Kampene	Sominki	1954	1.67
	Libindja	Sominki	1954	0.44
	Lubilu	Kinenga	1955	0.735
	Lutunguru	M.G.L. - NORD		0.22
	Mangembe	Sominki	1955	2.47
	Monkoto	Opak		0.22
	Nyabiodo	The		0.135
	Zizi	N.G.L. - SUD		1.53
	Kunda	Sominki		
	Lutshurukuru	Sominki		
				18.1
Upper Zaire	Budana	Kilo-Moto	1°40-1955	10.30
	N'Zoro	Kilo-Moto	1934	1.03
	Soleniama I	Kilo-Moto	1924	1.10
	Soleniama II	Kilo-Moto	1931	1.18
	Bandu	Ex-Cotonco		0.35
	Dingila	Ex-Cotonco	1954	0.38
				14.3
Eastern Kassai	Tshala I	Miba	1931	1.25
	Young I	Miba	1952	7.30
				8.5

Main high voltage lines in Zaire

Region	Voltage	Length	Route
Bas-Zaire	220	381.60	Inga-Kwilu-Kinshasa (Limingа, Lingwala, Maluku)
	132	181,50	Zonge-Mukula (Kinshasa)
			Inga-Kintata-Natadi-Boma
	70	224.50	Zonge-Combe (Kinshasa)
			Zonge-Lukala-Kwilu
Shaba	220	428.80	Nseke-Likasi-Lubumbashi-Kasumbalesa
		45.00	Kasumbalesa-Luano (Zambie)
	132	120.00	Kiymbi-Bendera-Kalemi
	120	733.00	Nseke-Nzilo
			-Lulu
			-Kayembe-Kisence
			-Kadi
			-Tenge-Likasi-Shilatembo
			Lubumbashi-Kipushi
			Mandinqusha-Koni
			Mwandigusha-Likasi
			Mpiana Mwanga-Manono
	70	70.00	Kilubi-Kamina
	55	47.00	Kalemie-Kabimba
	50	157.00	Kambeve-Kakanda
			Kambove-Likasi
			Kitwe-Shinkolobwe
			Lubumbashi-Ruashi
			Lubumbashi-Kipushi
Kivu	110	170.00	Bukavu-Kibuye-Kagoma-Kigali (Rwanda)
	70	42.73	Bukavu-Katana
		112.00	Bukavu-Bujumbura (Burundi)
Upper Zaire	70	?	Kilo-Moto-Bunia

Length of high voltage line

500 kilovolts	continuous current	(1,700 km)
220 kilovolts	alternating current	855.4 km
132	"	301.5 km
120	"	733 km
110	"	170 km
70	"	224.73 km
55	"	47 km
50	"	157 km
	Total	2,488.63 km
		+ 1,700.00 km
		4,188.63 km

In addition, power is carried by transmission lines from Zaire to neighbouring countries:

1. From the Ruzizi Plant (Bukavu, Kivu) to Kigali (Rwanda) via Kibuye and Kigoma - namely 110 kv over 170 km, with a capacity per transporting 10 mw;

2. from the Ruzizi plant to Bujumbura - 70 kv over 115 km, with a capacity for transporting 9 mw;

3. from Shaba to the Zambian copper belt and up to Kasambales 220kkv over 45 km, with a capacity per transporting 80 mw;

4. from Kinshasa to Brazzaville (30 kv), with a capacity for transporting 12 mw.

The overall export of electricity from Zaire to neighbouring countries is in excess of about 100 Gwh/yr.

The capacity of hydroelectric power plants in Zaire is much higher in the west, thanks to the Inga project. The Government is currently developing basic infrastructure towards the sea, so as to establish big, high energy consumption industries there:

- A road/railway bridge was constructed at Matadi on the River Zaire, with the assistance of Japan;

- it is planned to construct a road and a railway from Matadi to Moanda through Boma to serve the new Banana port and the industrial free zone;

- it is planned to supply the new Banana port and the industrial free zone with power from Inga;

- several major industrial projects are being considered, the main one being the aluminimum electrolysis factor, with a metal capacity of 600,000 tonnes/yr, of which the first phase production will be 150,000 tonnes/yr.

The northern, north-western and centre-northern parts of Zaire have inadequate supply of electeicity as the national power transmission networks do not serve these areas.

Zaire started construction of a dam at mMobaye on the Ubangui in January 1980. The project which was to last 4 years, was undertaken by two Belgian Companies: ACEBEL (Civil engineering) and ACEC-ELEC-TROBEL (the power station).

It related to the construction of a 26.4 MW low-fall power plant with eight 3.3 MW generators.

The Plant would provide neighbouring areas with power (G'Badelite, Kotakoli, then Bumena and Busanga) and help speed up agro-industrial development in the north.

Power production and consumption from 1960 to 1980 are estimated as follows:

Production of the big hydro-electric power plants and consumption (Gwh) from 1977 to 1980

Classification	1968	1977	1978	1979	1980
1. Gross production (a+b+c+d)	2,418	3,879	3,775	3,802	4,086
Production + import	2,429	3,919	3,782	3,815	4,096
a) 4 big Shaba plants	1,991	2,755	2,548	2,548	2,867
- Mwadingusha	(323)	(422)	(384)	(416)	(428)
- Koni	(157)	(197)	(193)	(225)	(271)
- N'zilo	(349)	(619)	(578)	(576)	(665)
	(1,162)	(1,517)	(1,388)	(1,367)	(1,512)
b) - Kilubi (Kamina)	...	10	11	4	10
c) Plants in the east	87	152	165	178	200
- Kalemie	(39)	(39)	(36)	(29)	(30)
- Bukavu	(29)	(60)	(78)	(97)	(119)
- Kisangani	(19)	(59)	(51)	(52)	(51)

(cont'd)

Classification	1968	1977	1978	1979	1980
d) Plants in Lower Zaire	239	962	1,051	1,036	1,000
- Inga I	-	(700)	(814)	(822)	(792)
- Sangha	(60)	-	-	-	(3)
- Zongo	(269)	(262)	(237)	(210)	(205)
e) Total import (Zambia)	11	40	7	13	10
2. Consumption (a+b+c+d+e+f+g)	2,336	3,828	3,642	3,709	3,989
Consumption and export	2,429	3,919	3,732	3,815	4,096
a) Mining and metallurgical industries	1,651	2,374	2,166	2,264	2,513
b) SNCZ railways	58	62	55	56	61
c) The big plants of southern Shaba excluding a and b	106	176	179	190	184
d) East-Kisangani	...	51	48	45	39
-Bukavu	...	53	70	93	109
-Kalemie	...	36	32	25	23
e) West-High power consumption plant excluding f	32	131	131	139	133
- Climat	-	(17)	(19)	(14)	(11)
- CIZA	(22)	(35)	(29)	(30)	(36)
- Kin-Matadi railway	(10)	(16)	(17)	(23)	(25)
- BOMA	-	(15)	(15)	(16)	(16)
- Matadi	-	(29)	(26)	(35)	(35)
- Maluku	-	(19)	(25)	(21)	(10)
f) The city of Kinshasa	249	612	643	699	648
g) Charges and losses	240	333	318	236	279
h) Total exports	93	91	140	106	107

Source: « Conjuncture Economique 1982 » Gmt du Zaire

The total capacity of hydroelectric power plants in Zaire increased from 1,001.9 MW in 1981 to 2,323.9 MW in 1982. The geographic breakdown is as follows:

Lower Zaire	1,711 MW
Upper Zaire	28 MW
Kivu	528.7 MW
Shaba	528.7 MW
Eastern Kassai	8.6 MW
Western Kassai	1.5 MW

A major project of rehabilitation of the main old hydroelectric power plants in the Shaba region, costing about $39 million, is being launched on behalf of the National Electricity Company, by the IBRD, Belgium, OPEC and SNEL.

2. Biomass

Zaire has enormous forest resources. The potential production capacity is estimated at 100 million tons/yr, in terms of renewable resources.

Present level of consumption (firewood, charcoal is 9 million tons/yr, in addition to use of agro-industrial waste including 50,000 tons of timber chips, 125,000 tons/yr of cane trash, waste from rubber trees, palm tree etc..

3. Fossil energy

- The eastern part of the country, particularly the zone of the active volcanoes (Ruwenzori) has prospects for development of geothermal energy.

- There are two coal mines in Shaba, towards Luena in the centre south and towards Lukuiga in the south-east. Production is about 100,000 tons/yr and reserves 700 million tons. The coal is not of a high quality and is used in the cement works, the copper industry and by the railways. Coal of high metallurgical quality is imported from Zimbabwe and Zambia.

- Proven petroleum reserves in Lower-Zaire is 150 million barrels and present production is 8 million barrals/yr. Off shore production is 280,000 barrels/year.

Prospection for petroleum is under way in the M'Bandaka-Mali-N'Dombe region in the interior of the country. A national refinery at Moanda processes 5.5 million barrels/yr. for domestic needs, mainly from imported crude since it was not designed for the local heavy crude.

- There are big methane reserves in Lake Kivu, which the three neighbouring countries (Rwanda, Burundi and Zaire) are interested in mining.

There are big oil shale deposits in the upper Jurassic rock in the Lomani and Lualaba valleys (Kisangani region). These deposits are not mined yet.

3. TRANSPORT INFRASTRUCTURE

The development of the transport network of Zaire was influenced by:

(a) the existence of 15,000 km of navigable waterways;

(b) the existence of localized rich mineral resources in the south east;

(c) the semi-land-locked position of thecountry, which only has one narrow access coridor to the sea;

(d) the fact that the climate and the forest reserves (44 per cent of the country) make road construction and maintenance very difficult;

(e) the sheer expanse of the national territory.

The transport system is based on two main rail river routes via Ilebo (Kassai and via Kisangani (Upper Zaire):

- the maritime reach of the River, from the Ocean to Matadi (150 km) with about 9 m draught;

- the Matadi-Kinshasa metric railway (366 km);

- the River and the Kassai from Kinshasa to Ilebo (port), a distance of 800 km;

- the Ilebo-Shaba metric railway, where the railway branches off to the north-east to Kamina-Kabalo-Kalemie on Lake Tanganyika and Kabalo-Kindu along the Lualaba. In addition there is an E-W railway which goes along the southern border of the country, from Tenke eastwards towards Angola (Lobito) and from Tenke to the south-west through the Zairian copper belt and connects the Zambian railways to the Indian Ocean ports (4,727 km).

The Kabalo-Kindu and Ubandu-Kisangani feeders circumvent the unnavigable sections of the corresponding river reaches of the Lualaba. The Kabalo-Kalunie feeder goes round the unnavigable section of the Lukuga and rejoins the navigable section of Lake Tanganyika.

Finally, a 60 m gauge isolated railway network opens up the north-eastern part of the country towards the River (Bumba and Aketi ports).

The national road network comprises 145,000 km of which 20,683 km are national roads and 20,201 km are regional priority roads.

Only 2,300 km of road is bitumen surfaced, i.e. from:

Matadi-Kinshasa-Kenge-Kikwit in the west, Lubumbashi-Likasi in the south, Kindi-Kalima in the cenre, Bukavu-Walikale in the east and Kisangani-Lubutu in the centre east.

Air transport plays a major role in the passenger and valuable goods transport. About fifty airports of varying categories are in use all the time.

Two pipelines, 4'' and 6'' wide transport petroleum products from Matadi to Kinshasa.

Both the railways and waterways of the Matadi-Kinshasa-Ilebo route, called the ''Voie Nationale'' are undergoing major improvement works undertaken by the Government.

The state, together with the World Bank and some European countries are making large investments for reequipment of this network. These investments include rehabilitation of the Matadi and Kinshasa ports ($90 million), Modernization of ONATRA ($84 million), strengtheningof the SNCZ ($161 million) and another project for strengthening the ''Régie des Voies Fluviales (Belgium, FRG, IBRD, EDF).

These projects cover all the various aspects of rehabilitating and developing the Voie Nationale, with emphasis on containerization, maintenance and buoyage of the waterway and equipment of ports.

The Government of Zaire also intends to construct a railway up to Ilebo, in addition to the waterway, so as to provide a quick transport route from Shaba to Matadi without break of bulk, which poses some economic problems.

The other opening up routes of Zaire are:

1. For the extreme north and north-west of the country, the Oubangui waterway plus the river (see general and CAR reports);

2. For the north-east, the ViciZaire railway which opens up the Uele and Ituri provinces to the River:

Mungbare-Bumba	868 km
Komba-Bondo	121 km
Andoma-Titule	32 km making a total of 1,021 km

3. For the east, the Kamina-Kabalo-Kalemies railway (720 km), then Lake transport to Kigoma (Tanzania) and the railway from Kigoma-Dar-Es-Salaam;

4. For the south (Shaba), the Zambia and Zimbabwe railways, with rail connection to the Indian Ocean ports (Mozambique, South Africa).

5. For the south (Shaba), the Benguela railway which provides access to the Atlantic at Lobito. This railway is no longer in use due to the war in Angola.

Annex 7.7.4

REPUBLIC OF ZAMBIA

1. GENERAL

1.1 Area
1.2 Population
1.3 Climate, vegetation

2. NATURAL RESOURCES

2.1 Land
2.2 Water resources
2.3 Agricultural production

2.3.1 Agriculture
2.3.2 Animal husbandry
2.3.3 Forestry
2.3.4 Fishing

3. MINERAL RESOURCES

3.1 General geology
3.2 Mineral deposits

4. ENERGY RESOURCES

4.1 Hydroelectric
4.2 Geothermal
4.3 Solar energy
4.4 Biomass
4.5 Fossil

5. INFRASTRUCTURE

5.1 Roads and railways
5.2 Waterways

6. INDUSTRIES

7. CONCLUSION

REPUBLIC OF ZAMBIA

1. GENERAL

The Republic of Zambia is a land-locked country, surrounded by Tanzania in the North, Malawi in the East, Mozambique in the south-east, Zimbabwe, Botswana and the Namibian corridor in the south, Angola in the west and Zaire in the north-west. It is situated at about the same distance from the Atlantic as it is from the Indian Ocean.

1.1 Area

Zambia covers a total area of 752,000 km2, of which 175,000 km2 in the extreme north is in the basin of the river. This area includes the administrative divisions of the Luapula province and a major part of the Northern province made up of the southern drainage areas of Lake Tanganyika, Chambezi river, Lake Bangwelu, Luapula river, Lake Mweru - with the Luapula and Mweru, forming the border between Zaire and Zambia. This part of the basin is made up of a peneplain in the west, with several lakes and marshes and mountains in the east (Mt. M'bala), an extension of the chain bordering Lake Malawi, and a plateau in the south-east (the Muchinga escarpment), whose ridge constitutes the end of the catchment basin of Chambezi-Mweru. Westwards of the M'Bala mountains, a plateau, 900-1,200 m high, occupies the central part of the zone and separates the lower basins of Lake Mweru and Chambezi-Bangwelu.

1.2 Population

Out of a total population of 5,300,000, about 1,036,000 of them are found in that section of the country lying with in the basin. This constitutes the entire population in the Luapula province (7.1 inhabitants/km2 on 5,000 km2) and most of the northern provinces (4.3 inhabitants/km2 on 125,000 km2). These figures are derived from the 1969 population census.

The annual average rate of population growth, which was 2.6 per cent in the 1970s rose to 3 per cent in the 1980s, thanks to the Government's public health care and economic development efforts.

However, the rate of population growth in the basin area is lower than the national average, due to the high level of emigration to the neighbouring ''copper belt province''. Successive national development plans, have managed to slow down this exodus, by improving economic and social service infrastructure and promoting the economic development of the area.

The principal urban centres are Mansa, Kasama, M'bala and the main M'Pulungu port on Lake Tanganyika.

1.3 Climate - vegetation

The Zambian section of the basin has three distinct climates with all the intermediary conditions:

(a) The highland climate, with temperatures ranging from 18°-21°C (Mt. M'Bala and north-east of the Muchinga mountains);

(b) The normal tropical climate with temperatures ranging from 21° to 26°C in the rest of the region, with lower temperatures in the plateaux (a short cold season);

(c) Hot tropical climate in the small coastal areas of Lakes Mweru, Tanganyika and Luapula, with still higher temperatures of between 24° and 26°C.

The M'Bala mountain region has excellent climate, with a minimum temperature of 17.5°C and a maximum of 21°C.

Rainfall ranges from 1,600 m in the central part (around Lake Bangwelu) to 800 m in the outlying areas. In January, the monsoon winds from the north-east blows over the whole country, as well as the north-westerly winds carrying moisture from the basin of the river and the south-easterly winds which create a zone of low depression in the central region. The rainfall is controlled by the passage of the Inter-Tropical Convergence Zone (ITCZ).

The rainy season begins in October/November and lasts until March/April, reaching a peak in December/January.

The vegetation varies with the altitude, rainfall and temperature:

(a) There are two types of forests:

- The dense forest (closed forest) can be found along the Luapula, along the non-floodable zones in the east and then west of Lake Bangwelu. This is a deteriorated forest in which five-resistant species have developed (Chipya).

- The wooded savannah (open forest) covers the rest of the area with the exception of the marshy swamps and the highlands which have the Miombo type of trees.

(b) The marshy zones along the rivers and around the lakes have grasslands which are devoid of trees around lake Bangwelu, the Luapula and towards the north (Mweru-wa-Tipa).

(c) The vegetation on the highlands (Mt. M'Bala) is mostly prairie and grass. Lakes and marshes make up about 15 per cent of the area, dense forests 15 per cent, savannahs about 65 per cent and the high altitudes 5 per cent.

2. NATURAL RESOURCES

2.1 Land

(a) The total cultivable land area of Zambia is estimated at 41 million ha. The land potential is classified into five categories:

(1) Plateau soils: acidic, thin, shallow, extensive, lateritic or gravelly at the bottom, good humus content at the top. Naturally, not sufficiently fertile for corn, but adequate for tobacco.

(2) Upper valley soils: clayey, reddish brown, neutral and quite fertile for corn (Kafue Flats, Petauke, Katete in the eastern province).

(3) Lower valley soils: clayey-sandy alluvia and alluvia (lower Zambezi, Luangwa, Lusenfwa valleys etc.); used for subsistence agriculture (millet, cassava, maize, potatoes etc.).

(4) Lake basin soils: quite sandy, yellowish brown, very acidic, unfertile but with high water retention capacity. Provides good pasture in the dry season (Kafue Flats, Lukanga Swamps, lower Chambeshi, Bangwelu, Mweru, Mweru-Wa-N'Tipa etc.).

(5) Areas covered by Kalahari sands (western province): acidic, poor quality, can only be used as pasture and for production of wood.

The section of the country in the basin receives the highest amount of rainfall:

- The central area, around and north of Lake Bangwelu and the lower Chambeshi Valley receive from 1,200 to ,1,600 mm.year.

- The rest of the area receives between 800 and 1,200 mm/year This area therefore has much to offer to agricultural development in Zambia in the future. The category 4 soils can be used for rice cultivation and their fertility is improved through development and cultivation. Subsistence agriculture (on the category 3 soils) can perhaps be improved by combining agriculture and animal husbandry with the use of organic and mineral fertilizers.

The diagram in annex 4 (Agricultural land use) gives an idea of the land potential of Zambia; 50 per cent of this is considered to be poor soils (subsistence agriculture) and 50 per cent of average quality.

The following tentative conclusion can be drawn from the analysis of the data on the soils and estimates on the current land use (diagram, annex 2):

1. The non-agricultural land areas make up 30 per cent or 52,500 km2 (rocky areas, steep slopes, lakes and rivers, arid soils).

2. The exploitable land makes up 122,500 km2 or 70 per cent of the land and comprises:

- highland prairies	5 per cent or	625,000 ha.
- plateaux soils	30 per cent or	3,750,000 ha.
- savannah	40 per cent or	5,000,000 ha.
- alluvia soils and marshes for rice farms	10 per cent or	1,250,000 ha.
- forests and lands to be forested	15 per cent or	1,875,000 ha.
Total		12,500,000 ha.

2.2 Water resources

In addition to the abundant water resources and the relatively regular rainfall, the country also has considerable potential for irrigation due to the topography (marshy zones) and the discharge of the rivers:

- the average discharge of the Chambezi river is 337 cu.m/sec;
- the discharge of the Luapula, on its exit from Lake Bangwelu 441 cu.m/sec;
- the Luapula enters Lake Mweru at a discharge of 754 cu.m/sec;
- the Kwalungwishi enters Lake Mweru at a discharge of 139 cu.m/sec.

The long term significance of this is that several hundred thousand hectares could be irrigated for rice cultivation, with one or two harvests per year, in this section of the basin. By using only a small fraction of the available water resources, rice could be cultivated in the marshes with one harvest per year

2.3 Agricultural production

2.3.1 Agriculture

The bulk of the production in this area is from subsistence agriculture. The main food crops are cassava, corn, millet, a large part of which is consumed by the producers.

The country's annual production is as follows: (tons)

	Luapula		Northern	
Years	1980-81	1981-82	1980-81	1981-82
Corn	3,600	5,400	40,500	72,000
Rice	2,800	4,012	2,400	2,400
Wheat	-	-	585	855
Groundnuts	160	160	520	648
Sun flower	600	1,050	-	-
Soya	-	-	22.5	2.5
Cotton seed	2.5	1.8	30.8	12
Tobacco	1.9	-	10.15	6.4

The Government is encouraging increased production of coffee, banana and rice of which current production levels do not meet domestic demand.

Production as a whole was affected by the severe drought in 1979/80 and 1982/83.

2.3.2 Animal husbandry

Livestock in the basin area is very limited due to the presence of the tse-tse fly, forest areas unsuitable for animal breeding, the people, who are not traditionally not animal breeders, and also probablydue to the fact that trypanoresistant animals and animal draught farming techniques are very little used, since the subsistence agriculture practised involves mostly burning of fields (Chitemene) and the use of the hoe.

The size of the livestock available in the basin area is as follows:

	Luapula region	Northern region	Total
Cattle	6,000-10,000	50,000	56,000-60,000
Sheep/goats	30,000	20,000	50,000
Pigs	-	2,000	2,000

Most of the livestock is concentrated in the north-western part of the country, in the highlands where there are no tse-tse fly and in areas where good pasture is available.

2.3.3 Forests

Forestry in Zambia is carried out mostly in the south-west, west of Livingstone, The basin area has good forest potential, exploitation of which began recently at the initiative of the Government (establishment of local sawmills).

Map No. 3 of the 3rd National Development Plan (1979-83) TNDP) gives an idea of the natural forest potential of the country. Also the country has substantial sources of quick growing trees (Eucalyptus, tropical pine, gmelina).

2.3.4 Fishing

The country has four main fishing areas:

- Lake Tanganyika
- Luapula and Lake Mweru
- Lake Bangwelu and its marshlands Mweru-Wa-N'tipa

Production levels in these areas are as follows:

- Mweru - Luapula	5,000 - 6,000 t/yr.
- Mweru-Wa-N'tipa	4,000 - 5,000 t/yr.
- Bangwelu	7,000 - 8,000 t/yr.
- Tanganyika	6,000 - 7,000 t/yr.
Total	22,000 -26,000 t/yr.

The two main problems faced in the fishing industry were conservation and transportation. Improvement of drying and smokingtechniques and construction of ice factories on the one hand, and the construction of roads to open up the copper belt in the west and efforts by Tazara in the east and the south on the other, have considerably enhanced production conditions and allowed for better service to the urban markets. cf, map no. 3 of TNDP and annexed diagrams.

3. MINERAL RESOURCES

3.1 General geology:

The basin area is made up essentially of granitic, gneissic and quartsite formations of the "basement complex". Reference should be made to the general description of the basin for the geological history and also to the annexed map (1/500,000 - Reeve 1963).

3.2 Mineral resources:

The only known mineral resources in the area are:

1. The manganese deposit of Mansa, which is mined on a small scale for production of raw materials for the Zambian electrical battery industry;

2. The search for gold (old mines are being re-explored) and other precious and semi-precious minerals is under way. A geological cartography of the area is also being undertaken by the Zambian Geological services;

3. The discovery of carbonate deposits containing rare metals, radioactive rocks, coal and phosphates in the sedimentary and epimetamorphic karoo formations at the north-eastern outskirts of the basin brings new hopes to the area.

4. Numerous thermal sources are found north and north-east of Lake Mweru and along Lake Tanganyika, which could be exploited for mineral water, serve as tourist attraction, used for swimming and for production of geothermal energy for local use.

5. Just as in all other areas where the basement complex crops out there are several mineral occurences here which need to be gradually studied and explored as the geological mapping of the area progresses towards its final completion (see diagram on mineral resources).

There are good prospects for discovering gold, particularly in the Serenje district, if serious prospection is undertaken over a long period of time.

In spite of the low mineral content of the phosphates (apatitic), they can be used economically in the chemical fertilizer industry, which already produces acids. Another industrial sector which needs to be studied is the processing of phosphates in the electric oven since Zambia has considerable surplus energy as well as coal.

4. ENERGY RESOURCES

4.1 Hydropower

The Zambian section of the basin has very high potential for hydropower production, especially on the Luapula, where there are narrow valleys, steep slopes and a big discharge as in the case of the Johnston Falls, at the border and in the eastern mountainous area (gorges, water falls, Kalambo Falls).

The list of hydroelectric power sites was not made available to us. As Zambia is already producing substantial amounts of energy from the neighbouring Zambezi valley (Kafue, Kariba Nord), and has also installed transmission lines, it has no immediate need to develop new sites, except to construct some small plants for supplying power to remote areas.

There are three hydropower plants in Zambia:

- Chisimba Falls near Mansa in the west,
- Lunzoa near M'Bala in the north-east;
- Musonda.

The plants are connected to the general network or are in the process of being connected to them. (see Diagram on Energy in the Annex).

The energy surplus of the country at present is about 200 MW which enhances the prospects for rapid industrial and agricultural development.

4.2 Geothermal energy

The numerous hot springs available can allow for the establishment of small plants for local use, where the cost of constructing transmission lines is very high and unprofitable.

4.3 Solar energy

The best areas for solar energy production are in the southern and western parts of the country, where it can be channelled into animal breeding and for use on isolated farms.

4.4 Biomass

The Government is concerned with clearing the vegetation in parts of the country with less rainfall, and its utilization for firewood and charcoal. Maximum use of coal and electricity has started actively, with electricity being supplied to the rural areas.

The basin area, which has the most rainfall has less problems, and can also produce biomass waste in very large quantities (quick growing trees).

4.5 Fossil energy

Coal deposits in the Karoo formations in the north-east extreme of the basin are being investigated. The presence of phosphates in the same region and the country's electric energy resources can make it possible to develop phosphates for local use.

There are no prospects for petroleum in the basin area.

5. INFRASTRUCTURE

5.1 Roads, railways

Since independence, the Government has been making very serious efforts to open up the country towards the sea, particularly towards north-east Tanzania and the Indian Ocean.

- The Zambia-Tanzania railway (Tan Zam) goes along the fringes of the basin from N'Dabula - Serenje up to M'Pika, then penetrates the north-east part of the basin up to the Tanzania border, in the direction of northern Nakondo via Kasama.

- The Benguela railway which goes up to the basin and along its fringe (Zaire-Zambia border) was one of the best routes for transporting minerals from the Zambian and Zairian Copperbelt.

- Substantial investments have been made in the road network, to link up the Luapula district to the copperbelt through the Zairian pedoncle which separates the two provinces, and to the northern province between the railway and Lake Tanganyika (M'Bala). The M'Pika-Tunduma (border) international road goes along the south-eastern fringes of the basin. The bitumen surfaced network, which is being extended, includes the following sections:

  . M'Bala-Mpulungu (main port on Lake Tanganyika)
  . Kassama (Tanzani station) - M'Bala
  . M'Pika - Tunduma
  . M'Pika - Kassama follows the same route as the railway.

Major investments have been made with respect to transportation of the fishery products to the markets in the south (see diagram in the Annex).

5.2 Waterways

The inland water transport routes include the following:

- the lower Luapula reach - Lake Moero used mostly for transporting fish;
- the Lake Bangwelu navigable waterways;
- inland navigation on Lake Tanganyika to Kigoma (Tanzania), Rwanda, Burundi and Zaire (Kalemie).

There is very little intra-African trade at present, but this is developing rapidly (export of Zambian cement to Rwanda and Burundi) via this multimodal transport route (railway - road lake).

It seems obvious, that the main interest of Zambia, as far as river transport is concerned, is to develop the Zambezi for navigation (Zambia-Zimbabwe-Mozambique), a route which could in the long run become the most economic route for Zambia and Zimbabwe.

6. INDUSTRIES

The main industries in the basin area are:

- fishing and fish processing at M'Pulungu on Lake Tanganyika;
- tea processing at Kawanba;
- a few sawmills at Mulobesi;
- a coffee processing unit at N'Goli;
- an electrical battery industry at Mansa together with small scale manganese mining;
- a small ice factory on Lake Mweru at Kashikishi.

7. CONCLUSION

Prospects for development in the area of the basin are very good, mainly as regards; agricultural development through:

a) Extension of plantations (coffee, banana, tea, fruits, timber (IBRD's coffee plantation project);

b) Development of irrigation for which the area has excellent potential, particularly for rice farms (FAO project - small scale irrigation under way) thanks to the large fl-odable areas available.

c) Mining and industrial development in the north east (Karoo formations - phosphate carbonatites, coal);

d) Development of the potential for fish production and raising of trypanoresistant animals;

e) And in the distant future, development of the hydroelectric power potential, particularly on the Luapula.

Several sectoral national development programmes could be promoted by drawing up a regional programme which brings them under one umbrella, for example:

- Fishing in frontier waters (Luapula, Mweru, Tanganyika) and improvement of inland waterways of local interest.

- Irrigation: increasing economic exchanges with other countries through the development of complementary production between the countries and improvement of the north-east transport route passing through Lake Tanganyika;

- Regulating the levels of Lake Tanganyika through improvement of the Lukuga;

- Co-operation to stop or limit pollution of the lakes and rivers and the atmosphere;

- Industrial co-operation by which Zambia could supply other countries with certain basic products such as cement, nitrogen and phosphate fertilizer and energy on an inter-subregional basis.

Finally, in the current situation of bilateral co-operation, it would be helpful, to set up a multilateral framework to review and find solutions to problems, as and when necessary.

STUDY ON THE ESTABLISHMENT OF AN INTERGOVERNMENTAL ORGANIZATION TO DEVELOP AND EXPLOIT THE RESOURCES OF THE RIVER CONGO/ZAIRE BASIN

ANNEX 7-9-1

General Act of the Conference of

Berlin of 26 February

1885

AFRICA (West).

GENERAL ACT of the Conference at Berlin of the Plenipotentiaries of Great Britain, Austria-Hungary, Belgium, Denmark, France, Germany, Italy the Netherlands, Portugal, Russia, Spain, Sweden and Norway, Turkey (and the United States)+respecting (1) Freedom of Trade in the Basin of the Congo, (2) The Slave Trade; (3) Neutrality of the Territories in the Basin of the Congo; (4) Navigation of the Congo; (5) Navigation of the Niger, and (6) Rules for future Occupation on the Coast of the African Continent. Signed at Berlin, February 26, 1885. ++

(Translation)

In the Name of Almighty God.

Her Majesty the Queen of the United Kingdom of Great Britain and Ireland, Empress of India; His majesty the German Emperor, King of Prussia; His Majesty the Emperor of Austria, King of Bohemia, &c., and Apostolic King of Hungary; His Majesty the King of the Belgians; His Majesty the King of Denmark; His Majesty the King of Spain; the President of the United States of America; the President of the French Republic; His Majesty the King of Italy; His Majesty the King of the Netherlands, Grand Duke of Luxemburg, &c.; His Majesty the King of Portugal and the Algarves, &c.; His Majesty the Emperor of all the Russias; His Majesty the King of Sweden and Norway, &c.; and His Majesty the Emperor of the Ottomans, wishing, in a spirit of good and mutual accord, to regulate the conditions most favourable to the development of trade and civilization in certain regions of Africa, and to assure to all nations the advantages of free navigation on the two chief rivers of Africa flowing into the Atlantic Ocean; being desirous, on the other hand, to obviate the misunderstanding and disputes which might in the future arise from new acts of occupation ("prises de possession") on the coast of Africa, and concerned, at the same time, as to the means of furthering the moral and material well-being of the native populations, have resolved, on the invitation addressed to them by the Imperial Government of Germany, in agreement with the Government of the French Republic, to meet for those purposes in Conference at Berlin, and have appointed as their Plenipotentiaries, to wit.

Her Majesty the Queen of the United Kingdom of Great Britain and Ireland, Empress of India, Sir Edward Baldwin Malet, Her Ambassador Extraordinary and Plenipotentiary at the Court of His Majesty the German Emperor, King of Prussia.

His Majesty the German Emperor, King of Prussia, Otho, Prince von Bismarck, his President of the Prussian Council of Ministers, Chancellor of the Empire Paul, Count von Hatzfeldt, his Minister of State and Secretary of State for Foreign Affairs August Busch, his Acting Privy Councillor of Legation and

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+ Not ratified by the United States. See Page 116.
++ Ratifications deposited at Berlin, April 19, 1886.

Under-Secretary of State for Foreign Affairs; and Henri von Kusserow, Privy Councillor of Legation in the Department for Foreign Affairs;

His Majesty the Emperor of Austria; King of Bohemia, &c., and Apostolic King of Hungary, Emeric, Count Széchényi de Sarvari Felsö-Vidék, Chamberlain and Acting Privy Councillor, his Ambassador Extraordinary and Plenipotentiary at the Court of His Majesty the German Emperor, King of Prussia;

His Majesty the King of the Belgians, Gabriel Auguste Count von der Straten-Ponthoz, Envoy Extraordinary and Minister Plenipotentiary at the Court of His Majesty the German Emperor, King of Prussia; and Auguste, Baron Lambermont, Minister of State, Envoy Extraordinary and Minister Plenipotentiary;

His Majesty the King of Denmark, Emile de Vind, Chamberlain, his Envoy Extraordinary and Minister Plenipotentiary at the Court of His Majesty the German Emperor, King of Prussia;

His Majesty the King of Spain, Don Francisco Merry y Colom, Count Benomar, his Envoy Extraordinary and Minister Plenipotentiary at the Court of His Majesty the German Emperor, King of Prussia.

The President of the United States of America, John A. Kasson, Envoy Extraordinary and Minister Plenipotentiary of the United States of America at the Court of His Majesty the German Emperor, King of Prussia, and Henry S. Sandford ex-Minister;

The President of the French Republic, Alphonse, Baron de Courcel, Ambassador Extraordinary and Plenipotentiary of France at the Court of His Majesty the German Emperor, King of Prussia;

His Majesty the King of Italy, Edward, Count de Launay, his Ambassador Extraordinary and Plenipotentiary at the Court of His Majesty the German Emperor, King of Prussia;

His Majesty the King of the Netherlands, Grand Duke of Luxemburg, Frederick Philippe, Jonkheer van der Hoeven, his Envoy Extraordinary and Minister Plenipotentiary at the Court of His Majesty the German Emperor, King of Prussia;

His Majesty the King of Portugal and the Algarves, &c., Da Serra Gomes, Marquis de Penafiel, Peer of the Realm, his Envoy Extraordinary and Minister Plenipotentiary at the Court of His Majesty the German Emperor, King of Prussia, and Antoine de Serpa Pimentel, Councillor of State and Peer of the Realm;

His Majesty the Emperor of All the Russias, Pierre, Count Kapnist, Privy Councillor, his Envoy Extraordinary and Minister Plenipotentiary at the Court of His Majesty the King of the Netherlands.

His Majesty the King of Sweden and Norway, &c., Gillis, Baron Bildt, Lieutenant-General, his Envoy Extraordinary and Minister Plenipotentiary at the Court of His Majesty the German Emperor, King of Prussia;

His Majesty the Emperor of the Ottomans, Mêhêmed Saïd Pasha, Vizir and High Dignitary, his Envoy Extraordinary and Plenipotentiary at the Court of His Majesty the German Emperor, King of Prussia;

Who, being provided with full powers, which have been found in good and due form, have successively discussed and adopted :

1. A Declaration relative to freedom of trade in the basin of the Congo, its embouchures and circumjacent regions, with other provisions connected therewith.

2. A Declaration relative to the Slave Trade, and the operations by sea or land which furnish slaves to that trade.

3. A Declaration relative to the neutrality of the territories comprised in the Conventional basin of the Congo.

4. An Act of Navigation for the Congo, which, while having regard to local circumstances, extends to this river, its affluents and the waters in its system ("eaux qui leur sont assimilées"), the general principles enunciated in Articles CVIII and CXVI of the Final Act of the Congress of Vienna,+ and intended to regulate, as between the Signatory Powers of that Act, the free navigation of the waterways separating or traversing several States- these said principles having since then been applied by agreement to certain rivers of Europe and America, but especially to the Danube, with the modifications stipulated by the Treaties of Paris (1856),++ of Berlin (1878) +++ and of London (1871 § and 1883 §§).

5. An Act of Navigation for the Niger, which, while likewise having regard to local circumstances, extends to this river and its affluents the same principles as set forth in Articles CVIII and CXVI of the Final Act of the Congress of Vienna.

+ See Vol. 1. Pages 3 and 7.
++ See Vol. 10. Page 526.
+++ See Vol. 14. Page 1175.
§ See Vol. 13. Page 747.
§§ See Vol. 15. Page 1070.

6. A Declaration introducing into international relations certain uniform rules with reference to future occupations on the coast of the African Continent.

And deeming it expedient that all these several documents should be combined in one single instrument, they (the Signatory Powers) have collected them into one General Act, composed of the following Articles :

CHAPTER I - DECLARATION RELATIVE TO FREEDOM OF TRADE IN THE BASIN OF THE CONGO, ITS MOUTHS AND CIRCUMJACENT REGIONS, WITH OTHER PROVISIONS CONNECTED THEREWITH

ART.I. The Trade of all nations shall enjoy complete freedom

1. In all the regions forming the basin of the Congo and its outlets. This basin is bounded by the watersheds (or mountain ridges) of the adjacent basins, namely, in particular, those of the Niari, the Ogowé, the Schari, and the Nile, on the north; by the eastern watershed line of the affluents of Lake Tanganyika on the east; and by the watersheds of the basins of the Zambesi and the Logé on the south. It therefore comprises all the regions watered by the Congo and its affluents, including Lake Tanganyika, with its eastern tributaries.

2. In the maritime zone extending along the Atlantic Ocean from the parallel situated in 2° 30' of south latitude to the mouth of the Logé.

The northern boundary will follow the parallel situated in 2° 30' from the coast to the point where it meets the geographical basin of the Congo, avoiding the basin of the Ogowé, to which the provisions of the present Act do not apply.

The southern boundary will follow the course of the Logé to its source, and thence pass eastwards till it joins the geographical basin of the Congo.

3. In the zone stretching eastwards from the Congo Basin, as above defined, to the Indian Ocean from 5 degrees of north latitude to the mouth of the Zambesi in the south, from which point the line of demarcation will ascend the Zambesi to 5 miles above its confluence with the Shiré, and then follow the watershed between the affluents of Lake Nyassa and those of the Zambesi, till at last it reaches the watershed between the waters of the Zambesi and the Congo.

It is expressly recognized that in extending the principle of free trade to this eastern zone the Conference Powers only undertake engagements for themselves, and that in the territories belonging to an independent Sovereign State this principle shall only be applicable in so far as it is approved by such State. But the Powers agree to use their good offices with the Governments established on the African shore of the Indian Ocean for the purpose of obtaining such approval, and in any case of securing the most favourable conditions to the transit (traffic) of all nations.

II. All flags, without distinction of nationality, shall have free access to the whole of the coast-line of the territories above enumerated, to the rivers there, running into the sea, to all the waters of the Congo and its affluents, including the lakes, and to all the ports situate on the banks of these waters, as well as to all canals which may in future be constructed with intent to unite the watercourses or lakes within the entire area of the territories described in Article I. Those trading under such flags may engage in all sorts of transport, and carry on the coasting trade by sea and river, as well as boat traffic, on the same footing as if they were subjects.

III. Wares, of whatever origin, imported into these regions, under whatsoever flag, by sea or river, or overland, shall be subject to no other taxes than such as may be levied as fair compensation for expenditure in the interests of trade, and which for this reason must be equally borne by the subjects themselves and by foreigners of all nationalities. All differential dues on vessels, as well as on merchandize, are forbidden.

IV. Merchandize imported into these regions shall remain free from import and transit dues.

The Powers reserve to themselves to determine after the lapse of twenty years whether this freedom of import shall be retained or not.

V. No Power which exercises or shall exercise sovereign rights in the above-mentioned regions shall be allowed to grant therein a monopoly or favour of any kind in matters of trade.

Foreigners, without distinction, shall enjoy protection of their persons and property, as well as the right of acquiring and transferring imovable and immovable possessions; and national rights and treatment in the exercise of their professions.

PROVISIONS RELATIVE TO PROTECTION OF THE NATIVES, OF MISSIONARIES AND TRAVELLERS, AS WELL AS RELATIVE TO RELIGIONS LIBERTY.

VI. All the Powers exercising sovereign rights or influence in the aforesaid territories bind themselves to watch over the preservation of the native tribes, and to care for the improvement of the conditions of their moral and material well-being, and to help in suppressing slavery, and especially the Slave Trade. They shall, without distinction of creed or nation, protect and favour all religious, scientific, or charitable institutions and undertakings created and organized for the above ends, or which aim at instructing the native and bringing home to them the blessings of civilization.

Christian missionaries, scientists, and explorers, with their followers, property, and collections, shall likewise be the objects of especial protection.

Freedom of conscience and religious toleration are expressly guaranteed to the natives, no less than to subjects and to foreigners. The free and public exercise of all forms of Divine worship, and the right to build edifices

for religious purposes, and to organize religious Missions belonging to all creeds shall not be limited or fettered in any way whatsoever.

POSTAL REGIME.

VII. The Convention of the Universal Postal Union, as revised at Paris the 1st June, 1878,+ shall be applied to the Conventional basin of the Congo.

The Powers who therein do or shall exercise rights of sovereignty or Protectorate engage, as soon as circumstances permit them, to take the measures necessary for the carrying out of the preceding provision.

RIGHT OF SURVEILLANCE VESTED IN THE INTERNATIONAL NAVIGATION COMMISSION OF THE CONGO

VIII. In all parts of the territory had in view by the present Declaration, where no Power shall exercise rights of sovereignty or Protectorate, the International Navigation Commission of the Congo, instituted in virtue of Article XVII shall be charged with supervising the application of the principles proclaimed and perpetuated ("consacrés") by this Declaration.

In all cases of difference arising relative to the application of the principles established by the present Declaration, the Governments concerned may agree to appeal to the good offices of the International Commission, by submitting to it an examination of the facts which shall have occasioned these differences.

CHAPTER II - DECLARATION RELATIVE TO THE SLAVE TRADE

IX. Seeing that trading in slaves is forbidden in conformity with the principles of international law as recognized by the Signatory Powers, and seeing also that the operations, which, by sea or land, furnish slaves to trade, ought likewise to be regarded as forbidden, the Powers which do or shall exercise sovereign rights or influence in the territories forming the Conventional basin of the Congo declare that these territories may not serve as a market or means of transit for the trade in slaves, of whatever race they may be. Each of the Powers binds itself to employ all the means at its disposal for putting an end to this trade and for punishing those who engage in it.

CHAPTER III - DECLARATION RELATIVE TO THE NEUTRALITY OF THE TERRITORIES COMPRISED IN THE CONVENTIONAL BASIN OF THE CONGO

X. In order to give a new guarantee of security to trade and industry, and to encourage, by the maintenance of peace, the development of civilization

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+ See Vol. 14. Page 1007.

in the countries mentioned in Article I, and placed under the free trade system, the High Signatory Parties to the present Act and those who shall hereafter adopt it, bind themselves to respect the neutrality of the territories, of portions of territories, belonging to the said countries, comprising therein the territorial waters, so long as the Powers which exercise or shall exercise the rights of sovereignty or Protectorate over those territories, using their option of proclaiming themselves neutral, shall fulfil the duties which neutrality requires.

XI. In case a Power exercising rights of sovereignty or Protectorate in the countries mentioned in Article I, and place under the free trade system, shall be involved in a war, then the High Signatory Parties to the present Act, and those who shall hereafter adopt it, bind themselves to lend their good offices in order that the territories belonging to this Power and comprised in the Conventional free trade zone shall, by the common consent of this Power and of the other belligerent or belligerents, be placed during the war under the rule of neutrality, and considered as belonging to a non-belligerent State, the belligerents thenceforth abstaining from extending hostilities to the territories thus neutralized, and from using them as a base for warlike operations.

XII. In case a serious disagreement originating on the subject of, or in the limits of, the territories mentioned in Article I, and placed under the free trade system, shall arise between any Signatory Powers of the present Act, or the Powers which may become parties to it, these Powers bind themselves, before appealing to arms, to have recourse to the mediation of one or more of the friendly Powers.

In a similar case the same Powers reserve to themselves the option of having recourse to arbitration.

CHAPTER IV - ACT OF NAVIGATION FOR THE CONGO

XIII. The navigation of the Congo, without excepting any of its branches or outlets, is, and shall remain, free for the merchant-ships of all nations equally, whether carrying cargo or ballast, for the transport of goods or passengers. It shall be regulated by the provisions of this Act of Navigation and by the rules to be made in pursuance thereof.

In the exercise of this navigation the subjects and flags of all nations shall in all respects be treated on a footing of perfect equality, not only for the direct navigation from the open sea to the inland ports of the Congo, and vice versa, but also for the great and small coasting trade, and for boat traffic on the course of the river.

Consequently, on all the course and mouths of the Congo there will be no distinction made between the subjects of Riverain States and those of non-Riverain States, and no exclusive privilege of navigation will be conceded to Companies, Corporations, or private persons whatsoever.

These provisions are recognized by the Signatory Powers as becoming henceforth a part of international law.

XIV. The navigation of the Congo shall not be subject to any restriction or obligation which is not expressly stipulated by the present Act. It shall not be exposed to any landing dues, to any station or depôt tax, or to any charge for breaking bulk, or for compulsory entry into port.

In all the extent of the Congo the ships and goods in process of transit on the river shall be submitted to no transit dues, whatever their starting-place or destination.

There shall be levied no maritime or river toll based on the mere fact of navigation, nor any tax on goods aboard of ships. There shall only be levied taxes or duties having the character of an equivalent for services rendered to navigation itself, to wit

1. Harbour dues on certain local establishments, such as wharves, warehouses, &c., if actually used.

The tariff of such dues shall be framed according to the cost of constructing and maintaining the said local establishments; and it will be applied without regard to whence vessels come or what they are loaded with.

2. Pilot dues for those stretches of the river where it may be necessary to establish properly-qualified pilots.

The tariff of these dues shall be fixed and calculated in proportion to the service rendered.

3. Charges raised to cover technical and administrative expenses incurred in the general interest of navigation, including lighthouse, beacon, and buoy duties.

The last-mentioned dues shall be based on the tonnage of vessels as shown by the ship's papers, and in accordance with the rules adopted on the Lower Danube.

The tariffs by which the various dues and taxes enumerated in the three preceding paragraphs shall be levied shall not involve any differential treatment, and shall be officially published at each port.

The Powers reserve to themselves to consider, after the lapse of five years, whether it may be necessary to revise, by common accord, the above-mentioned tariffs.

XV. The affluents of the Congo shall in all respects be subject to the same rules as the river of which they are tributaries.

And the same rules shall apply to the streams and river as well as the lakes and canals in the territories defined in paragraphs 2 and 3 of Article I.

At the same time the powers of the International Commission of the Congo will extend to the said rivers, streams, lakes, and canals, unless with the assent of the States under whose sovereignty they are placed. It is well understood, also, that with regard to the territories mentioned in paragraph 3 of Article I the consent of the Sovereign States owning these territories is reserved.

XVI. The roads, railways, or lateral canals which may be constructed with the special object of obviating the innavigability or correcting the imperfection of the river route on certain sections of the course of the Congo, its affluents, and other water-ways placed under a similar system, as laid down in Article XV, shall be considered in their quality of means of communication as dependencies of this river, and as equally open to the trafic of all nations.

And, as on the river itself, so there shall be collected on these roads, railways, and canals only tolls calculated on the cost of construction, maintenance, and management, and on the profits due to the promoters.

As regards the tariff of these tolls, strangers and the natives of the respective territories shall be treated on a footing of perfect equality.

XVII. There is instituted an International Commission, charged with the execution of the provisions of the present Act of Navigation.

The Signatory Powers of this Act, as well as those who may subsequently adhere to it, may always be represented on the said Commission, each by one Delegate. But no Delegate shall have more than one vote at his disposal, even in the case of his representing several Governments.

This Delegate will be directly paid by his Government. As for the various agents and employee of the International Commission, their remuneration shall be charged to the amount of the dues collected in conformity with paragraphs 2 and 3 of Article XIV.

The particulars of the said remuneration, as well as the number, grade, and powers of the agents and employee, shall be entered in the returns to be sent yearly to the Governments represented on the International Commission.

XVIII. The members of the International Commission, as well as its appointed agents, are invested with the privilege of inviolability in the exercise of their functions. The same guarantee shall apply to the offices and archives of the Commission.

XIX. The International Commission for the Navigation of the Congo shall be constituted as soon as five of the Signatory Powers of the present General Act shall have appointed their Delegates. And, pending the constitution of the Commission, the nomination of these Delegates shall be notified to the Imperial Government of Germany, which will see to it that the necessary steps are taken to summon the meeting of the Commission.

The Commission will at once draw up navigation, river police, pilot, and quarantine rules.

These rules, as well as the tariffs to be framed by the Commission, shall, before coming into force, be submitted for approval to the Powers represented on the Commission. The Powers interested will have to communicate their views with as little delay as possible.

Any infringement of these rules will be checked by the agents of the International Commission wherever it exercises direct authority, and elsewhere by the Riverain Power.

In the case of an abuse of power, or of an act of injustice, on the part of any agent or employee of the International Commission, the individual who considers himself to be aggrieved in his person or rights may apply to the Consular Agent of his country. The latter will examine his complaint, and if he finds it prima facie reasonable he will then be entitled to bring it before the Commission. At his instance then, the Commission, represented by at least three of its members, shall, in conjuction with him, inquire into the conduct of its agent or employee. Should the Consular Agent look upon the decision of the Commission as raising questions of law ("objections de droit"), he will report on the subject to his Government, which may then have recourse to the Powers represented on the Commission, and invite them to agree as to the instructions to be given to the Commission.

XX. The International Commission of the Congo, charged in terms of Article XVII with the execution of the present Act of Navigation, shall in particular have power :-

1. To decide what works are necessary to assure the navigability of the Congo in accordance with the needs of international trade.

On those sections of the river where no Power exercises sovereign rights the International Commission will itself take the necessary measures for assuring the navigability of the river.

On those sections of the river held by a Sovereign Power the International Commission will concert its action ("s'entendra") with the riparian authorities.

2. To fix the pilot tariff and that of the general navigation dues as provided for by paragraphs 2 and 3 of Article XIV.

The tariffs mentioned in the first paragraph of Article XIV shall be framed by the territorial authorities within the limits prescribed in the said Article.

The levying of the various dues shall be seen to by the international or territorial authorities on whose behalf they are established.

3. To administer the revenue arising from the application of the preceding paragraph (2).

4. To superintend the quarantine establishment created in virtue of Article XXIV.

5. To appoint officials for the general service of navigation, and also its own proper employee.

It will be for the territorial authorities to appoint Sub-Inspectors on sections of the river occupied by a Power, and for the International Commission to do so on the other sections.

The Riverain Power will notify to the International Commission the appointment of Sub-Inspectors, and this Power will undertake the payment of their salaries.

In the exercise of its functions, as above defined and limited, the International Commission will be independent of the territorial authorities.

XXI. In the accomplishment of its task the International Commission may, if need be, have recourse to the war-vessels of the Signatory Powers of this Act, and of those who may in future accede to it, under reserve, however, of the instructions which may be given to the Commanders of these vessels by their respective Governments.

XXII. The war-vessels of the Signatory Powers of this Act that may enter the Congo are exempt from payment of the navigation dues provided for in paragraph 3 of Article XIV, but, unless their intervention has been called for by the International Commission or its agents, in terms of the preceding Article, they shall be liable to the payment of the pilot or harbour dues which may eventually be established.

XXIII. With the view of providing for the technical and administrative expenses which it may incur, the International Commission created by Article XVII may, in its own name, negotiate loans to be exclusively guaranteed by the revenues raised by the said Commission.

The decisions of the Commission dealing with the conclusion of a loan must be come to by a majority of two-thirds. It is understood that the Governments represented on the Commission shall not in any case be held as assuming any guarantee, or as contracting any engagement or joint liability ("solidarité") with respect to the said loans, unless under special Conventions concluded by them to this effect.

The revenue yielded by the dues specified in paragraph 3 of Article XIV shall bear, as a first charge the payment of the interest and sinking fund of the said loans, according to agreement with the lenders.

XXIV. At the mouth of the Congo there shall be founded, either on the initiative of the Riverain Powers, or by the intervention of the International Commission, a quarantine establishment for the control of vessels passing out of as well as into the river.

Later on the Powers will decide whether and on what conditions a sanitary control shall be exercised over vessels engaged in the navigation of the river itself.

XXV. The provisions of the present Act of Navigation shall remain in force in time of war. Consequently all nations, whether neutral or belligerent, shall be always free, for the purposes of trade, to navigate the Congo, its branches, affluents, and mouths, as well as the territorial waters fronting the embouchure of the river.

Traffic will similarly remain free, despite a state of war, on the roads, railways, lakes, and canals mentioned in Article XV and XVI.

There will be no exception to this principle, except in so far as concerns the transport of articles intended for a belligerent, and in virtue of the law of nations regarded as contraband of war.

All the works and establishments created in pursuance of the present Act especially the tax-collecting offices and their treasuries, as well as the permanent service staff of these establishments shall enjoy the benefits of neutrality ("placés sous le régime de la neutralité"), and shall, therefore, be respected and protected by belligerents.

CHAPTER V - ACT OF NAVIGATION FOR THE NIGER

XXVI. The navigation of the Niger, without excepting any of its branches and outlets, is and shall remain entirely free for the merchant ships of all nations equally, whether with cargo or ballast, for the transportation of goods and passengers. It shall be regulated by the provisions of this Act of Navigation, and by the rules to be made in pursuance of this Act.

In the exercise of this navigation the subjects and flags of all nations shall be treated, in all circumstances on a footing of perfect equality, not only for the direct navigation from the open sea to the inland ports of the Niger, and vice versa, but for the great and small coasting trade, and for boat trade on the course of the river.

Consequently, on all the course and mouths of the Niger there will be no distinction made between the subjects of the Riverain States and those of non-Riverain States; and no exclusive privilege of navigation will be conceded to Companies, Corporations, or private persons.

These provisions are recognized by the Signatory Powers as forming henceforth a part of international law.

XXVII. The navigation of the Niger shall not be subject to any restriction or obligation based merely on the fact of navigation.

It shall not be exposed to any obligation in regard to landing-station or depôt, or for breaking bulk, or for compulsory entry into port.

In all the extent of the Niger the ships and goods in process of transit on the river shall be submitted to no transit dues, whatever their starting-place or destination.

No maritime or river toll shall be levied based on the sole fact of navigation, nor any tax on good on board ships. There shall only be collected taxes or duties which shall be an equivalent for services rendered to navigation itself. The Tariff of these taxes or duties shall not warrant any differential treatment.

XXVIII. The affluents of the Niger shall be in all respects subject to the same rules as the river of which they are tributaries.

XXIX. The roads, railways, or lateral canals which may be constructed with the special object of obviating the innavigability or correcting the imperfections of the river route on certain sections of the course of the Niger, its affluents, branches, and outlets, shall be considered, in their quality of means of communication, as dependencies of this river, and as equally open to the traffic of all nations.

And, as on the river itself, so there shall be collected on these roads, railways, and canals only tolls, calculated on the cost of construction, maintenance, and management, and on the profits due to the promoters.

As regards the Tariff of these tolls, strangers and the natives of the respective territories shall be treated on a footing of perfect equality.

XXX. Great Britain undertakes to apply the principles of freedom of navigation enunciated in Articles XXVI, XXVII, XXVIII, and XXIX on so much of the waters of the Niger, its affluents, branches, and outlets, as are or may be under her sovereignty or protection.

The rules which she may establish for the safety and control of navigation shall be drawn up in a way to facilitate, as far as possible, the circulation of merchant-ships.

It is understood that nothing in these obligations shall be interpreted as hindering Great Britain from making any rules of navigation whatever which shall not be contrary to the spirit of these engagements.

Great Britain undertakes to protect foreign merchants and all the trading nationalities on all those portions of the Niger which are or may be under her sovereignty or protection as if they were her own subjects, provided always that such merchants conform to the rules which are or shall be made in virtue of the foregoing.

XXXI. France accepts, under the same reservations, and in identical terms, the obligations undertaken in the preceding Articles in respect of so much of the waters of the Niger, its affluents, branches, and outlets, as are or may be under her sovereignty or protection.

XXXII. Each of the other Signatory Powers binds itself in the same way in case it should ever exercise in the future rights of sovereignty or protection over any portion of the waters of the Niger, its affluents, branches, or outlets.

XXXIII. The arrangements of the present Act of Navigation will remain in force in time of war. Consequently, the navigation of all neutral or belligerent nations will be in all time free for the usages of commerce on the Niger, its branches, its affluents, its mouths, and outlets, as well as on the territorial waters opposite the mouths and outlets of that river.

The traffic will remain equally free in spite of a state of war on the roads, railways, and canals mentioned in Article XXIX

There will be an exception to this principle only in that which relates to the transport of articles destined for a belligerent, and considered, in virtue of the law of nations, as articles contraband of war.

CHAPTER VI - DECLARATION RELATIVE TO THE ESSENTIAL CONDITIONS TO BE OBSERVED IN ORDER THAT NEW OCCUPATIONS ON THE COASTS OF THE AFRICAN CONTINENT MAY BE HELD TO BE EFFECTIVE

XXXIV. Any Power which henceforth takes possession of a tract of land on the coasts of the African Continent outside of its present possessions, or which, being hitherto without such possessions, shall acquire them, as well as the Power which assumes a Protectorate there, shall accompany the respective act with a notification thereof, addressed to the other Signatory Powers of the present Act, in order to enable them, if need be, to make good any claims of their own.

XXXV. The Signatory Powers of the present Act recognize the obligation to insure the establishment of authority in the regions occupied by them on the coasts of the African Continent sufficient to protect existing rights, and, as the case may be, freedom of trade and of transit under the conditions agreed upon.

CHAPTER VII - GENERAL DISPOSITIONS

XXXVI. The Signatory Powers of the present General Act reserve to themselves to introduce into it subsequently, and by common accord, such modifications and improvements as experience may show to be expedient.

XXXVII. The Powers who have not signed the present General Act shall be free to adhere to its provisions by a separate instrument.

The adhesion of each Power shall be notified in diplomatic form to the Government of the German Empire, and by it in turn to all the other Signatory or adhering Powers.

Such adhesion shall carry with it full acceptance of all the obligations as well as admission to all the advantages stipulated by the present General Act.

XXXVIII. The present General Act shall be ratified with as little delay as possible, the same in no case to exceed a year.

It will come into force for each Power from the date of its ratification by that Power.

Meanwhile, the Signatory Powers of the present General Act bind themselves not to take any steps contrary to its provisions.

Each Power will address its ratification to the Government of the German Empire, by which notice of the fact will be given to all the other Signatory Powers of the present Act.

The ratifications of all the Powers will be deposited in the archives of the Government of the German Empire. When all the ratifications shall have been sent in, there will be drawn up a Deposit Act, in the shape of a Protocol, to be signed by the Representatives of all the Powers which have taken part in the Conference of Berlin, and of which a certified copy will be sent to each of those Powers.

In testimony whereof the several Plenipotentiaries have signed the present General Act and have affixed thereto their seals.

Done at Berlin, the 26th day of February, 1885.

(L.S.) EDWARD B. MALET
(L.S.) V. BISMARCK
(L.S.) BUSCH
(L.S.) V. KUSSEROW
(L.S.) SZHENYI
(L.S.) COMTE AUGUSTE VAN DER STRATEN-PONTHOZ
(L.S.) BARON LAMBERMONT
(L.S.) E.VIND
(L.S.) COMTE DE BENOMAR
(L.S.) JOHN A. KASSON
(L.S.) H.S. SANFORD
(L.S.) ALPH. DE COURCEL
(L.S.) LAUNAY
(L.S.) F.P. VAN DER HOEVEN
(L.S.) MARQUIS DE PENAFIEL
(L.S.) A. DE SERPA PIMENTEL
(L.S.) COMTE P. KAPNIST
(L.S.) GILLIS WILDT
(L.S.) SAID

STUDY ON THE ESTABLISHMENT OF AN INTERGOVERNMENTAL ORGANIZATION TO DEVELOP AND EXPLOIT THE RESOURCES OF THE RIVER CONGO/ZAIRE BASIN

ANNEX 7-9-2

General Act of the Conference of
Brussels of 2 July
1890

AFRICA (GENERAL)

(Brussels Act. African Slave Trade, &c.)

No 130 - GENERAL ACT OF THE BRUSSELS CONFERENCE RELATIVE TO THE African Slave Trade, &c. Signed at Brussels, 2nd July, 1890.*

(See also General Act, signed at Berlin, 26th February, 1885 (p. 468)

(Translation)

General Act of the Brussels Conference, 2nd July, 1890.

In the name of God Almighty.

Her Majesty the Queen of the United Kingdom of Great Britain and Ireland, Empress of India;

His Majesty the German Emperor, King of Prussia in the name of the German Empire;

His Majesty the Emperor of Austria, King of Bohemia, &c., and Apostolic King of Hungary;

His Majesty the King of the Belgians;

His Majesty the King of Denmark;

His Majesty the King of Spain, and in His name Her Majesty the Queen Regent of the Kingdom;

His Majesty the King-Sovereign of the Independent State of the Congo;

The President of the United States of America;

The President of the French Republic;

His Majesty the King of Italy;

His Majesty the King of the Netherlands, Grand Duke of Luxemburg, &c.;

His Majesty the Shah of Persia;+

His Majesty the King of Portugal and the Algarves, &c.;

His Majesty the Emperor of All the Russias;

His Majesty the King of Sweden and Norway, &c.;

His Majesty the Emperor of the Ottomans; and

His Highness the Sultan of Zanzibar;

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* Signed in the French Language. For Protocol of Conferences, see Par. Pap., "Africa, No. 8 (1890)."

+ Persia acceded, 3rd July, 1890. Ethiopia acceded, 15th September, 1890. Liberia acceded, 7th-15th August, 1892: and the Orange Free State acceded, 10th February, 1896.

Equally animated by the firm intention of putting an end to the crimes and devastations engendered by the traffic in African slaves, of effectively protecting the aboriginal populations of Africa, and of assuring to that vast continent the benefits of peace and civilization;

Wishing to give a fresh sanction to the decisions already taken in the same sense and at different periods by the Powers; to complete the results obtained by them; and to draw up a collection of measures guaranteeing the accomplishment of the work which is the object of their common solicitude;

Have resolved, on the invitation addressed to them by the Government of His Majesty the King of the Belgians, in agreement with the Government of Her Majesty the Queen of the United Kingdom of Great Britain and Ireland, Empress of India, to assemble with this object a Conference at Brussels, and have named as their Plenipotentiaries, that is to say :

Her Majesty the Queen of the United Kingdom of Great Britain and Ireland, Empress of India, Lord Vivian, Peer of the United Kingdom, her Envoy Extraordinary and Minister Plenipotentiary to His Majesty the King of the Belgians; and Sir John Kirk;

His Majesty the German Emperor, King of Prussia, in the name of the German Empire, M. Frédéric-Jean, Comte d'Alvensleben, his Chamberlain and Privy Councillor, his Envoy Extraordinary and Minister Plenipotentiary to His Majesty the King of the Belgians; and M. Guillaume Göhring, his Privy Councillor of Legation, Consul-General of the Empire of Germany at Amsterdam;

His Majesty the Emperor of Austria, King of Bohemia, and Apostolic King of Hungary, Rodolphe, Count Khevenhüller-Metsch; his Chamberlain, his Envoy Extraordinary and Minister Plenipotentiary to His Majesty the King of the Belgians;

His Majesty the King of the Belgians, Auguste, Baron Lambermont, his Minister of State, his Envoy Extraordinary and Minister Plenipotentiary, and M. Emile Banning, Director-General of the Ministry of Foreign Affairs of Belgium;

His Majesty the King of Denmark; M. Frédéric-George Schack de Brockdorff, Consul-General of Denmark at Antwerp;

His Majesty the King of Spain, and in his name Her Majesty the Queen-Regent of the Kingdom, Don José Gutierrez de Aguëra, his Envoy Extraordinary and Minister Plenipotentiary to His Majesty the King of the Belgians;

His Majesty the Sovereign King of the Congo Free State, M. Edmond van Eetvelde, Administrator-General of the Department of Foreign Affairs of the Congo Free State; and M. Auguste van Maldeghem, Councillor of the Court of Cassation of Belgium;

The President of the United States of America, Mr. Edwin H. Terrell, Envoy Extraordinary and Minister Plenipotentiary of the United States of America to His Majesty the King of the Belgians, and Mr. Henry Shelton Sanford,

The President of the French Republic, M. Albert Bourée, Envoy Extraordinary and Minister Plenipotentiary of the French Republic to His Majesty the King of the Belgians, and M. George Gogordan, Minister Plenipotentiary, Chief of the Cabinet of the Ministry of Foreign Affairs of France,

His Majesty the King of Italy, M. François de Renzis, Baron de Montanaro, his Envoy Extraordinary and Minister Plenipotentiary to His Majesty the King of the Belgians; and M. Thomas Catalani, his Envoy Extraordinary and Minister Plenipotentiary;

His Majesty the King of the Netherlands, Grand Duke of Luxemburg, Louis, Baron Gericke de Herwynen, his Envoy Extraordinary and Minister Plenipotentiary to His Majesty the King of the Belgians;

His Imperial Majesty the Shah of Persia, General Nazare Aga, his Envoy Extraordinary and Minister Plenipotentiary to His Majesty the King of the Belgians,

His Majesty the King of Portugal and the Algarves, M. Henrique de Macedo Pereira Coutinho, Member of his Council, Peer of the Realm, Minister and Honorary Secretary of State, his Envoy Extraordinary and Minister Plenipotentiary to His Majesty the King of the Belgians;

His Majesty the Emperor of All the Russias, Léon, Prince Ouroussoff, Master of his Court, his Envoy Extraordinary and Minister Plenipotentiary to His Majesty the King of the Belgians; and M. Frédéric de Martens, his Councillor of State, Permanent Member of the Council of the Ministry of Foreign Affairs of Russia;

His Majesty the King of Sweden and Norway, M. Charles de Burenstam, his Chamberlain, his Minister Plenipotentiary to His Majesty the King of the Belgians, and to His Majesty the King of the Netherlands,

His Majesty the Emperor of the Ottomans, Etienne Carathéodory Efendi, High Dignitary of his Empire, his Empire, his Envoy Extraordinary and Minister Plenipotentiary to His Majesty the King of the Belgians,

His Highness the Sultan of Zanzibar, Sir John Kirk and M. Guillaume Göhring,

Who, furnished with full powers which have been found in good and due form, have adopted the following provisions : -

CHAP. I - SLAVE TRADE COUNTRIES, MEASURES TO BE TAKEN IN PLACES OF ORIGIN.

Art. I. - The Powers declare that the most effective means for counteracting the Slave Trade in the interior of Africa are the following :

ORGANISATION OF ADMINISTRATIVE, JUDICIAL, RELIGIOUS, AND MILITARY SERVICES.

1. Progressive organization of the administrative, judicial, religious, and military services in the African territories placed under the sovereignty or protectorate of civilized nations.

FORTIFIED STATIONS IN THE INTERIOR. MAN-HUNTS.

2. The gradual establishment in the interior, by the responsible Power in each territory, of strongly occupied stations, in such a way as to make their protective or repressive action effectively felt in the territories devastated by man-hunts.

ROADS AND RAILWAYS.

3. The construction of roads, and in particular of railways, connecting the advanced stations with the coast, and permitting easy access to the inland waters, and to the upper reaches of streams and rivers which are broken by rapids and cataracts, so as to substitute economical and speedy means of transport for the present means of portage by men.

STEAM-BOATS ON INLAND WATERS AND ON LAKES. FORTIFIED POSTS ON BANKS.

4. Establishment of steam-boats on the inland navigable waters and on the lakes, supported by fortified posts established on the banks.

TELEGRAPH LINES.

5. Establishment of telegraphic lines assuring the communication of the posts and stations with the coast and with the administrative centres.

EXPEDITIONS AND FLYING COLUMNS.

6. Organization of expeditions and flying columns to keep up the communication of the stations with each other and with the coast, to support repressive action, and to assure the security of roadways.

FIRE ARMS AND AMUNITION.

7. Restriction of the importation of fire arms, at least of modern pattern, and of ammunition, throughout the entire extent of the territories infected by the slave trade.

POSTS, STATIONS, AND CRUISERS, IN INLAND WATERS.

Art. II. - The stations, the cruisers organized by each Power in its inland waters, and the posts which serve as ports for them shall, independently of their principal task, which is to prevent the capture of slaves and intercept the routes of the Slave Trade, have the following subsidiary duties : -

PROTECTION TO NATIVES.

1. To serve as a base and, if necessary, as a place of refuge for the native populations placed under the sovereignty or the protectorate of the State to which the station belongs, for the independent populations, and temporarily for all others in case of imminent danger; to place the populations of the first of these categories in a position to co-operate for their own defence;

ARBITRATION IN INTESTINE WARS.

To diminish intestine wars between tribes by means of arbitration;

AGRICULTURAL WORKS AND INDUSTRIAL ARTS.

To initiate them in agricultural works and in the industrial arts so as to increase their welfare;

BARBAROUS CUSTOMS. CANNIBALISM. HUMAN SACRIFICES.

To raise to civilization and bring about the extinction of barbarous customs, such as cannibalism and human sacrifices.

COMMERCIAL UNDERTAKINGS.

To give aid and protection to commercial undertakings;

CONTRACTS OF SERVICE WITH NATIVES.

To watch over their legality, especially by controlling contracts of service with natives;

PERMANENT CENTRES. COMMERCIAL ESTABLISHMENTS, &c.

And to lead up to the foundation of permanent centres of cultivation and of commercial establishments.

PROTECTION OF MISSIONS.

3. To protect, without distinction of creed, the missions which are already or may hereafter be established.

SANITARY SERVICE. ASSISTANCE, &c., TO EXPLORERS

4. To provide for the sanitary service, and to grant hospitality and help to explorers and to all who take part in Africa in the work of repressing the Slave Trade.

REPRESSION OF THE SLAVE TRADE. ENGAGEMENTS OF EACH POWER.

Art. III. - The Powers exercising sovereignty or protectorate in Africa, in order to confirm and to give greater precision to their former declarations, undertake to proceed gradually, as circumstances permit, either by the means above indicated, or by any other means which they may consider suitable, with the repression of the Slave Trade; each State in its respective Possessions and under its own direction. Whenever they consider it possible they will lend their good offices to the Powers which, with a purely humanitarian object, may be engaged in Africa upon a similar mission.

ENGAGEMENTS OF POWERS MAY BE DELEGATED TO CHARTERED COMPANIES, BUT POWERS REMAIN RESPONSIBLE.

Art. IV. - The powers exercising sovereignty or protectorate in Africa may, however, delegate to Chartered Companies all or a portion of the engagements which they assume in virtue of Article III. They remain, nevertheless, directly responsible for the engagements which they contract by the present General Act, and guarantee the execution thereof.

NATIONAL ASSOCIATIONS AND PRIVATE ENTERPRISES.

The Powers promise to receive, aid, and protect national associations and enterprises due to private initiative, which may wish to co-operate in their Possessions in the repression of the Slave Trade, subject to their receiving previous authorization, which is revocable at any time; subject also to their being directed and controlled, and to the exclusion of any exercise of rights of sovereignty.

PENAL LAWS TO BE ENACTED : - AGAINST OFFENCES AGAINST THE PERSON, MAN-HUNTS, MUTILATION OF ADULTS AND MALE INFANTS, CAPTURE OF SLAVES BY VIOLENCE.+

Art. V. - The Contracting Powers undertake, unless this has already been provided for by laws in accordance with the spirit of the present Article, to enact or propose to their respective Legislatures, in the course of one year at latest from the date of the signature of the present General Act, a Law applying, on the one hand, the provisions of their penal laws concerning grave offences against the person, to the organizers and abettors of man-hunts, to perpetrators of the mutilation of adults and male infants, and to all persons who may take part in the capture of slaves by violence;

+ See also Art. XIX, P. 498.

ALSO AGAINST OFFENCES AGAINST INDIVIDUAL LIBERTY, TO CARRIERS, TRANSPORTERS, AND DEALERS IN SLAVES.

And on the other hand, the provisions relating to offences against individual liberty, to carriers, transporters, and dealers in slaves.

ACCOMPLICES AND ACCESSORIES.

Accomplices and accessories of the different categories of slave captors and dealers above specified shall be punished with penalties proportionate to those incurred by the principals.

ARREST AND TRIAL OF GUILTY PERSONS.

Guilty persons who may have escaped from the jurisdiction of the authorities of the country where the crimes or offences have been committed, shall be arrested either on communication of the incriminatory evidence by the authorities who have ascertained the violation of the law, or on production of any other proof of guilt by the Power on whose territory they may have been discovered, and shall without other formality, be held at the disposal of the tribunals competent to try them.

LAWS, &c., OF EACH COUNTRY TO BE COMMUNICATED TO THE POWERS.

The Powers will communicate to each other with the least possible delay the Laws or Decrees already in existence or promulgated in execution of the present Article.

LIBERATED SLAVES.

Art. VI. - Slaves liberated in consequence of the stoppage or dispersal of a convoy in the interior of the continent, shall be sent back, if circumstances permit, to their country of origin; if not, the local authorities shall help them as much as possible to obtain means of subsistence, and, if they desire to settle on the spot.

FUGITIVE SLAVES. RECEPTION IN OFFICIAL CAMPS AND STATIONS, OR ON GOVERNMENT VESSELS ON LAKES AND RIVERS.

Art. VII. - Any fugitive slave claiming on the continent the protection of the Signatory Powers shall obtain it, and shall be received in the camps and stations officially established by them, or on board Government vessels plying on the Lakes and rivers.

PRIVATE STATIONS OR VESSELS NOT TO GRANT ASYLUM WITHOUT PERMISSION.

Private stations and vessels are only permitted to exercise the right of asylum subject to the previous sanction of the State.

IMPORTATION OF FIRE-ARMS AND AMMUNITION PROHIBITED
WITHIN DEFINED ZONE, EXCEPT IN CERTAIN CASES,

AND UNDER CERTAIN CONDITIONS.

Art. VIII. The experience of all nations who have intercourses with Africa having shown the pernicious and preponderating part played by fire-arms in Slave Trade, operations, as well as in intestine wars between native tribes; and this same experience having clearly proved that the preservation of the African populations, whose existence it is the express wish of the Powers to safeguard, is a radical impossibility if restrictive measures against the trade in fire-arms and ammunition are not established, the Powers decide, in so far as the present state of their frontiers permits, that the importation of fire-arms, and especially of rifles and improved weapons, as well as of powder, balls, and cartridges, is, except in the cases and under the conditions provided for in the following Article, prohibited in the territories comprised between the 20th parallel of north latitude and the 22nd parallel of south latitude, and extending westward to the Atlantic Ocean, and eastward to the Indian Ocean and its dependencies, comprising the islands adjacent to the coast as far as 100 nautical miles from the shore.+ (See also Article XC, p. 514 (Spirituous Liquors).)

FIRE-ARMS AND AMMUNITION. EXCEPTIONAL CASES IN WHICH THEY MAY
BE IMPORTED, AND UNDER WHAT CONDITIONS.

Art. IX. - The introduction of fire-arms and ammunition, when there shall be occasion to authorize it in the Possessions of the Signatory Powers which exercise rights of sovereignty or of protectorate in Africa, shall be regulated in the following manner in the zone laid down in Article VIII, unless identical or more rigorous regulations have been already applied : -

DEPOSIT OF ARMS (AND GUNPOWDER, SEE NEXT PAGE)
IN WAREHOUSES.

All imported fire-arms shall be deposited, at the cost, risk, and peril of the importers, in a public warehouse placed under the control of the Administration of the State.

AS TO THEIR WITHDRAWAL.

No withdrawal of fire-arms or imported ammunition shall take place from such warehouses without the previous authorization of the Administration. This authorization shall, except in cases hereinafter specified, be refused for the withdrawal of all arms of precision, such as rifles, magazine-guns, or breech-loaders, whether whole or in detached pieces, their cartridges, caps, or other ammunition intended for them.

+ See General Map of Africa (Map No. 1 in Atlas or Pouch).

PRIVATE WAREHOUSES UNDER NEEDFUL GUARANTEES.

At the seaports the respective Governments may permit the establishment of private warehouses, under conditions affording the needful guarantees; but only for ordinary powder and flint-lock guns, and to the exclusion of improved arms and their ammunition.

INDIVIDUAL EXCEPTIONS. WEAPONS CARRIED BY TRAVELLERS FOR PERSONAL DEFENCE.

Besides the measures directly taken by Governments for the arming of the public force and the organization of their defence, individual exceptions shall be admitted for persons affording sufficient guarantees that the arms and ammunition delivered to them will not be given, assigned, or sold to third persons, and for travellers provided with a declaration of their Government stating that the weapons and ammunition are destined exclusively for their personal defence.

LICENCES TO BEAR ARMS.

In the cases provided for in the preceding paragraph all arms shall be registered and marked by the authorities appointed for the control, who shall deliver to the persons in question licences to bear arms, indicating the name of the bearer and showing the stamp with which the arm is marked. These licences are revocable in case of proved abuse, and will be issued for five years only, but may be renewed.

GUNPOWDER.

The rule above set forth as to warehousing shall also apply to gunpowder.

WITHDRAWAL OF FLINT-LOCK UNRIFLED GUNS AND TRADE POWDER.

Only flint-lock unrifled guns and common gunpowder, called trade powder ("poudres de traite"), can be withdrawn from the warehouses for purposes of sale. At each withdrawal of arms and ammunition of this kind for sale, the local authorities shall determine the regions in which these arms and ammunition may be sold.

SLAVE TRADE REGIONS EXCEPTED.

The regions infected by the Slave Trade shall always be excluded.

LISTS TO BE KEPT OF ARMS AND AMMUNITION WITHDRAWN, AND HOW DISPOSED OF.

Persons authorized to take arms or powder out of the warehouses shall present to the Administration every six months detailed lists indicating the destinations of the said fire-arms and powder sold, as well as the quantities still remaining in store.

IMPORTATION, SALE, AND TRANSPORTS OF FIRE-ARMS AND AMMUNITION REQUIRED BY AUTHORITIES OF AN INLAND STATE.

Art. X. - The Governments shall take all measures they may deem necessary to ensure as complete a fulfilment as possible of the provisions respecting the importation, sale, and transport of fire-arms and ammunition, as well as to prevent either the entry or exit thereof by their inland frontiers, or the conveyance thereof to regions where the Slave Trade exists.

The authorization of transit within the limits of the zone specified by Article VIII cannot be withheld when the arms and ammunition are to pass across the territory of a Signatory or adherent Power in the occupation of the coast, towards inland territories placed under the sovereignty or protectorate of another Signatory or adherent Power, unless this latter Power has direct access to the sea through its own territory. Nor, if this access be completely interrupted, can the authorization of transit be withheld.

DECLARATION TO BE MADE.

Any demand for transit must be accompanied by a declaration emanating from the Government of the Power having the inland Possessions, and certifying that the said arms and ammunition are not destined for sale, but are for the use of the authorities of such Power, or of the military forces necessary for the protection of the missionary or commercial stations, or of persons mentioned by name in the declaration.

RIGHTS RESERVED OF TERRITORIAL POWER ON THE COAST.

Nevertheless, the territorial Power of the coast retains the right to stop, exceptionally and provisionally, the transit of arms of precision and ammunition across its territory if, in consequence of inland disturbances or other serious danger, there is ground for fearing that the dispatch of arms and ammunition might compromise its own safety.

INFORMATION AS TO TRAFFIC IN FIRE-ARMS AND AMMUNITION TO BE COMMUNICATED BY THE POWERS TO EACH OTHER.

Art. XI. - The Powers shall communicate to each other information relating to the traffic in fire-arms and ammunition, the licences granted, and the measures of repression in force in their respective territories.

ARMS AND AMMUNITION. PENAL LAWS TO BE PASSED ON THE SUBJECT.

Art. XII. - The Powers undertake to adopt or to propose to their respective Legislature the measures necessary to insure that those who infringe the prohibitions laid down in Articles VIII and IX, and their accomplices, shall, besides the seizures and confiscation of the prohibited arms and ammunition, be punished either by fine or by imprisonment, or by both penalties together, in proportion to the importance of the offence, and in accordance with the gravity of each case.

FIRE-ARMS AND AMMUNITION TO BE PREVENTED FROM CROSSING INLAND FRONTIERS OF EUROPEAN POSSESSIONS INTO REGIONS OF THE ZONE.+

Art. XIII. - The Signatory Powers who have Possessions in Africa in contact with the zone specified in Article VIII, bind themselves to take the necessary measures for preventing the introduction of fire-arms and ammunition across their inland frontiers into the regions of the said zone, at least that of improved arms and cartridges.

DURATION OF SYSTEM FOR 12 YEARS, AND AFTERWARDS FROM TWO YEARS TO TWO YEARS, UNLESS REVISED.

Art. XIV. - The system established under Articles VIII to XIII inclusive shall remain in force for twelve years. In case none of the Contracting Parties shall have notified, twelve months before the expiration of this period, their intention of putting an end to it, nor shall have demanded its revision, it shall continue to remain obligatory for two more years, and shall thus continue in force from two years to two years.

CHAP. II. - CARAVAN ROUTES AND LAND TRANSPORT OF SLAVES.

WATCHING ROUTES OF SLAVE-DEALERS; STOPPING AND PURSUIT OF CONVOYS ON THE MARCH.

Art. IV. - Independently of the repressive or protective action which they exercise in the centres of the Slave Trade, the stations, cruizers, and posts, the establishment of which is provided for in Article II, and all other stations established or recognized according to the terms of Article IV by each Government in its possessions, will furthermore have the mission of watching, so far as circumstances permit, and in proportion to the progress of their administrative organization, the routes on their territory followed by the slave-dealers, of stopping the convoys on the march, and of pursuing them wherever they can legally take action.

ESTABLISHMENT OF POSTS NEAR PASSAGE OR TERMINAL POINTS ON THE COAST, AND AT POINTS OF INTERSECTION OF PRINCIPAL CARAVAN ROUTES CROSSING ZONE.

Art. XVI. - In the regions of the coast known to serve habitually as places of passage or terminal points for Slave Traffic coming from the interior, as well as at the points of intersection of the principal caravan routes crossing the zone contiguous to the coast already subject to the influence of the

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+ See General Map of Africa, Map NO. 1 in Atlas, or Pouch.

Sovereign or Protecting Powers, posts shall be established, under the conditions and with the reservations mentioned in Article III, by the authorities responsible for such territories, with the purpose of intercepting the convoys and liberating the slaves.

PREVENTION OF SALE OR SHIPMENT OF SLAVES, AND STOPPAGE OF MAN-HUNTERS AND SLAVE-DEALERS.

Art. XVII. - A strict supervision shall be organized by the local authorities at the ports and in the countries adjacent to the coast, with the view of preventing the sale and shipment of slaves brought from the interior, as well as the formation and departure for the interior of bands of man-hunters and slave-dealers.

INSPECTION OF CARAVANS.

Caravans arriving at the coast or its vicinity, as well as those arriving in the interior at a locality occupied by the authorities of the territorial Power, shall, on arrival, be submitted to a minute inspection as to the persons composing them.

INDIVIDUALS MAY BE LIBERATED ON CERTAIN CONDITIONS.

Any individual ascertained to have been captured or carried off by force or mutilated, either in his native country or on the way, shall be liberated.

LIBERATED SLAVES.

Art. XVIII. - In the Possessions of each of the Contracting Powers the Administration shall have the duty of protecting liberated slaves, of repatriating them if possible, of procuring for them means of subsistence, and in particular of providing for the education and support of abandoned children.

APPLICATION OF PENAL ARRANGEMENTS.

Art. XIV. - The penal arrangements provided for in Article V (p. 493) shall be made applicable to all crimes or offences committed in the course of operations for the transport of and traffic in slaves on land, whenever proved.

Any person having incurred a penalty in consequence of an offence provided for by the present General Act, shall be under the obligation of providing security before he is allowed to undertake any commercial operation in countries where the Slave Trade is carried on.

CHAP. III. - REPRESSION OF THE SLAVE TRADE BY SEA.

§ 1. General Provisions.

REPRESSION OF THE SLAVE TRADE IN THE MARITIME ZONE.

Art. XX. - The Signatory Powers acknowledge the opportuneness of taking steps in common for the more effective repression of the Slave Trade in the maritime zone in which it still exists.

DEFINITION OF MARITIME ZONE.*

Art. XXI.+ - This zone extends, on the one hand, between the coasts of the Indian Ocean (those of the Persian Gulf and of the Red Sea included) from Beloochistan to Point Tangalane (Quilimane), and, on the other hand, a conventional line which first follows the meridian of Tangalane till it meets the 26th degree of south latitude; is then merged in this parallel, then passes round the Island of Madagascar by the east, keeping 20 miles off the east and north shore, till it crosses the meridian of Cape Amber. From this point the limit of the zone if determined by an oblique line which extends to the coast of Beloochistan, passing 20 miles off Cape Ras-el-Had**

RIGHT OF SEARCH, VISIT, AND DETENTION OF VESSELS AT SEA.

Art. XXII. + - The Signatory Powers of the Present General Act, between whom there are special Conventions for the suppression of the Slave Trade, have agreed to restrict to the above-mentioned zone the clauses of these Conventions concerning the reciprocal right of visit, search, and detention ("droit de visite, de recherche, et de saisie") of vessels at sea. (See also Article XXIII.)

RIGHT LIMITED TO VESSELS OF LESS THAN 500 TONS BURTHEN.

Art. XXIII.+ - The same Powers have also agreed to limit the above-mentioned right to vessels of less than 500 tons burthen.

STIPULATION MAY BE REVISED.

This stipulation shall be revised as soon as experience shall have shown the necessity of such revision.

CONFIRMATION OF SLAVE TRADE TREATIES BETWEEN CONTRACTING POWERS TO GENERAL ACT.

Art. XXIV. - All other provisions of the Conventions concluded between the aforesaid Powers, for the suppression of Slave Trade, remain in force in so far as they are not modified by the present General Act. (See also Art. XCVI, p. 516.)

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* See also Berlin Act, 26th February, 1885, Art. I, p. 471 (Congo Basin).
\+ See Protocols. Ratifications, 2nd July, 1891, 2nd January, 1892, 2nd February, 1892, and 30th March, 1892, and 30th March, pp. 520 to 528, French Reservations, p. 524.
** See General Map of Africa, Map No. 1 in Atlas, or Vouch.

FRAUDULENT USE OF FLAG. STOPPAGE BY POWERS OF TRANSPORT OF SLAVES ON VESSELS AUTHORIZED TO USE THEIR FLAG.

Art. XXV. - The Signatory Powers undertake to adopt effective measures for preventing the usurpation of their flag, and putting a stop to the transport of slaves on vessels authorized to fly their colours.

RAPID EXCHANGE OF INFORMATION RESPECTING SLAVE TRADE OPERATIONS.

Art. XXVI. - The Signatory Powers undertake to adopt all measures necessary for facilitating the rapid exchange of information calculated to bring about the discovery of persons taking part in Slave Trade operations.
(See also Article LXVIII, p. 510.)

INTERNATIONAL BUREAU TO BE ESTABLISHED AT ZANZIBAR.

Art. XXVII. - At least one International Bureau shall be created, it shall be established at Zanzibar. The High Contracting Parties undertake to forward to it all the documents specified in Article XLI (p. 503), as well as information of all kinds likely to assist in the suppression of the Slave Trade.

FREEDOM OF FUGITIVE SLAVES ON BOARD SHIPS OF WAR.

Art. XXVIII. - Any slave who may have taken refuge on board a ship of war flying the flag of one of the Signatory Powers shall be immediately and definitively freed; such freedom, however, shall not withdraw him from the competent jurisdiction, if he has committed a crime or offence at common law.

RIGHT OF SLAVES DETAINED AGAINST THEIR WILL ON BOARD A NATIVE VESSEL TO CLAIM THEIR LIBERTY.

Art. XXIX. - Every slave detained against his wish on board a native vessel shall have the right to claim his liberty.

His freedom may be declared by any Agent of one of the Signatory Powers on whom the General Act confers the right of ascertaining the status of persons on board such vessels; such freedom, however, shall not withdraw him from the competent jurisdiction if he has committed a crime or offence at common law.

§ II. Regulation concerning the Use of the Flag and Supervision by Cruizers.

1. Rules respecting the Grant of the Flag to Native Vessels, and respecting Crew Lists and Manifests of Black Passengers.

SUPERVISION OVER NATIVE VESSELS.

Art. XXX.* - The Signatory Powers undertake to exercise a strict supervision over the native vessels authorized to fly their flag in the zone indicated in

* See also Article XLI, p. 503.

Article XXI, and over the commercial operations carried on by such vessels.

MEANING OF TERM "NATIVE VESSEL".

Art. XXXI. - The term "native vessel" applies to vessels fulfilling one of the two following conditions :

1. It must present the outward appearance of native build of rig.

2. It must be manned by a crew of whom the captain and the majority of the seamen belong by origin to a country having a sea coast on the Indian Ocean, the Red Sea, or the Persian Gulf.

CONDITIONS ON WHICH ANY OF THE TREATY POWERS SHALL AUTHORIZE NATIVE VESSELS TO FLY THEIR FLAG.

Art. XXXII. - Authority to fly the flag of one of the said Powers shall in future only be granted to such native vessels as shall satisfy all the three following conditions :

1. Their fitters-out or owners must be either subjects of or persons protected by the Power whose flag they claim to fly.

2. They must furnish proof that they possess real estate situated in the district of the authority to whom their application is addressed, or to supply a solvent security as a guarantee for any fines to which they may eventually become liable.

3. Such fitters-out or owners, as well as the captain of the vessel, must furnish proof that they enjoy a good reputation, and especially that they have never been condemned for acts of Slave Trade.

AUTHORITY TO BE RENEWED YEARLY, AND MAY BE SUSPENDED OR WITHDRAWN.

Art. XXXIII. - The authorization, when granted, shall be renewed every year. It can at any time be suspended or withdrawn by the authorities of the Power whose colours the vessel flies.

OTHER PRECAUTIONS TO BE TAKEN.

Art. XXXIV. - The deed of authorization shall bear the indications necessary to establish the identity of the vessel. The captain shall have the custody of it. The name of the native vessel and the indications of its tonnage shall be inlaid and painted in Latin characters on the stern, and the initial or initials of the name of the port of registry, as well as the registration number in the series of numbers of that port, shall be printed in black on the sails.

CREW LIST. PROVISIONS.

Art. XXXV. - A crew list shall be issued to the captain of the vessel at the port of departure by the authorities of the Power whose colours it flies. It shall be renewed each time the vessel is fitted out, or, at latest, at the end of a year, and in conformity with the following provisions : -

1. The list shall be visé at the moment of departure by the authority who has issued it.

2. No negro can be engaged as a seaman on a vessel without having been previously questioned by the authority of the Power whose colours it flies, or, failing such authority, by the territorial authority, with a view to establish that he has contracted a free engagement.

3. Such authority shall see that the proportion of seamen and boys is not out of proportion to the tonnage or rig of the vessels.

4. The authority who shall have interrogated the men before their departure shall inscribe them on the crew list, in which they shall be mentioned, with a short description of each of them against his name.

5. In order the more effectively to prevent any substitution, the seamen may, moreover, be provided with a distinctive mark. (See also Article XXXIX, p. 503.)

EMBARKATION OF NEGRO PASSENGERS.

Art. XXXVI. - If the captain of a vessel should desire to embark negro passengers, he shall make declaration thereof to the authority of the Power whose colours he flies, or, failing such authority, to the territorial authority. The passengers shall be interrogated, and after it has been ascertained that they embark of their own free will, they shall be inscribed in a special manifest, bearing the description of each of them against the name, and indicating especially sex and height. Negro children shall not be admitted as passengers unless they are accompanied by their relations, or by persons whose respectability is well known. On departure the passenger manifest shall be visé by the aforesaid authority after it has been called over. If there are no passengers on board this shall be specially mentioned on the crew list. (See also Article XXXIX, p. 503.)

NEGRO PASSENGERS. FORMS TO BE OBSERVED BY THE CAPTAIN OF A VESSEL ON ARRIVAL AT ANY PORT OF CALL OR DESTINATION.

Art. XXXVII. - On arrival at any port of call or of destination, the captain of the vessel shall show to the authority of the Power whose flag he flies, or, failing such authority, to the territorial authority, the crew list, and, if need be, the passenger manifests previously delivered. Such authority shall check the passengers arrived at their destination or stopping at a port of call, and shall mention their landing in the manifest. On departure the said authority shall affix a fresh visa to the list and to the manifest, and shall call over the passengers. (See also Article XXXIX, p. 503.)

LANDING OF NEGRO PASSENGERS.

Art. XXXVIII. - On the African coast and on the adjacent islands no negro passengers shall be shipped on board a native vessel, except in localities where there is a resident authority belonging to one of the Signatory Powers.

Throughout the zone mentioned in Article XXI no negro passenger shall be landed from a native vessel, except at a place in which there is a resident authority belonging to one of the High Contracting Powers, and unless such authority is present at the landing.

Case of force majeure which may have caused an infraction of these provisions shall be examined by the authority of the Power whose colours the vessel flies, or, failing such authority, by the territorial authority of the port at which the inculpated vessel puts in. (See also Article XXXIX.)

EXCEPTIONS TO THE ABOVE.

PARTIALLY DECKED VESSELS WITH NOT MORE THAN 10 MEN.

Art. XXXIX. - The provisions of Articles XXXV. XXXVI, XXXVII, and XXXVIII are not applicable to vessels only partially decked, having a maximum crew of 10 men, and satisfying one of the two following conditions :-

FISHING VESSELS. TERRITORIAL WATERS.

1. That it is exclusively employed in fishing within territorial waters.

SMALL COASTING TRADERS.

2. That it is occupied in the small coasting trade between different ports of the same territorial Powers and never goes further than 5 miles from the coast.

SPECIAL LICENCES TO BE GRANTED.*

These different boats shall receive, according to circumstances from the territorial or Consular authority, a special licence, renewable every year, and revocable under the conditions provided for in Article XL, and the uniform model of which, annexed to the present General Act, shall be communicated to the International Information Office.

LICENCES TO BE WITHDRAWN IN CERTAIN CASES.

Art. XL. - All acts or attempted acts of slave trade legally brought home to the captain, fitter-out, or owner of a vessel authorized to fly the flag of one of the Signatory Powers, or holding the licence provided for in Article XXXIX, shall entail the immediate withdrawal of the said authorization or licence.

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* See p. 517.

PENALTIES FOR OFFENCES.

All offences against the provisions of Section 2 of Chapter III shall in addition be punished by the penalties enacted by special Laws and Ordinances of each of the Contracting Powers.

FORMS OF DOCUMENTS TO BE DEPOSITED AT INTERNATIONAL INFORMATION OFFICE.

Art. XLI. - The Signatory Powers undertake to deposit at the International Information Office specimen forms of the following documents : -

1. Licences to fly the flag;
2. Crew list;
3. Manifest of negro passengers.

These documents, the tenour of which may vary according to the different Regulations of each country, shall compulsorily contain the following particulars, drawn up in an European language : -

AUTHORISATION TO FLY THE FLAG.

1. As regards the authorization to fly the flag:
(a) The name, tonnage, rig, and principal dimensions of the vessel;
(b) The register number and the signal letter of the port of registry;
(c) The date of obtaining the licence, and the office held by the person who has issued it.

THE CREW LIST.

2. As regards the crew list;
(a) The name of the vessel, of the captain, and of the fitter-out or owner;
(b) The tonnage of the vessel;
(c) The register number and the port of regisery of the vessel, its destination, and the particulars specified in Article XXV.

MANIFEST OF NEGRO PASSENGERS.

3. As regards the manifest of negro passengers:

The name of the vessel which conveys them, and the particulars indicated in Article XXXVI for the proper identification of the passengers.

The Signatory Powers shall take the necessary measures in order that the territorial authorities or their Consuls may send to the said office certified copies of all authorizations to fly their flag, as soon as such authorizations shall have been granted, as well as notice of the withdrawal of any such authorization.

The provisions of the present Article only concern the papers intended for native vessels.

2. DETENTION OF SUSPECTED VESSELS.

VERIFICATION OF SHIP'S PAPERS OF SUSPECTED VESSELS.

Art. XLII.+ - When the officers in command of vessels of war of any of the Signatory Powers have reason to believe that a vessel of less than 500 tons burthen, found in the above-mentioned zone, is engaged in the Slave Trade, or is guilty of the fraudulent use of a flag, they may proceed to the verification of the ship's papers.

JURISDICTION IN TERRITORIAL WATERS.

The present Article does not imply any change in the present state of things as regards jurisdiction in territorial waters.

CONDUCT OF NAVAL OFFICER ON BOARD SUSPECTED VESSEL.

Art. XLIII.+ - With this object, a boat, commanded by a naval officer in uniform, may be sent on board the suspected vessel after it has been hailed to give notice of such intention.

The officer sent on board the vessel detained shall act with all possible consideration and moderation.

VERIFICATION OF SHIP'S PAPERS. EXAMINATION OF DOCUMENTS.

Art. XLIV.+ - The verification of the ship's papers shall consist in the examination of the following documents : -

1. As regards native vessels, the papers mentioned in Article XLI.
2. As regards other vessels, the documents required by the different Treaties or Conventions remaining in force.

The verification of the ship's papers only authorizes the master of the crew and passengers in the cases and under the conditions provided for in the following Article.

INVESTIGATION OF THE CARGO OR SEARCH.

Art. XLV.+ - Investigation of the cargo or search can only take place with respect to a vessel navigating under the flag of one of the Powers which have concluded, or may conclude, special Conventions as mentioned in Article XXII, in accordance with the provisions of such Conventions.

DETAINED VESSELS. FORMS TO BE OBSERVED.

Art. XLVI.+ - Before quitting the detained vessel, the officer shall draw up a Minute according to the forms and in the language of the country to which he belongs.

+ See Protocols. Ratifications, 2nd July, 1891, 2nd January, 1892, 2nd February, 1892, and 30th March, 1892, pp. 520 to 528. French Reservations, p. 524.

This Minute shall be dated and signed by the officer, and shall relate the facts.

The captain of the detained vessel, as well as the witnesses, shall have the right to cause to be added to the Minute any explanations they may think expedient.

DETAINED VESSELS. REPORT TO BE MADE TO GOVERNMENT.

Art. XLVII.+ - The Commander of a man-of-war who may have detained a vessel under a foreign flag shall in all cases make a Report thereon to his own Government, and state the grounds upon which he acted.

DETAINED VESSELS. COPY OF REPORT TO BE SENT TO INTERNATIONAL INFORMATION OFFICE.

Art. XLVIII.+ - A summary of this Report, as well as a copy of, the Minute drawn up by the officer sent on board the detained vessel, shall be sent as soon as possible to the International Information Office which shall communicate the same to the nearest Consular or territorial authority of the Power whose flag was used by the vessel in question. Duplicates of these documents shall be kept in the archives of the office.

VESSELS DETAINED ON SUSPICION. WHERE TO BE TAKEN TO.

Art. XLIX.+ - If, in carrying out the supervision provided for in the preceding Articles, the officer in command of the cruizer is convinced that an act of Slave Trade has been committed on board during the passage, or that irrefutable proofs exist against the captain, or fitter-out, to justify a charge of fraudulent use of the flag, of fraud, or of participation in the Slave Trade, he shall take the detained vessel to the nearest port of the zone where there is a competent authority of the Power whose flag has been used.

APPOINTMENT IN ZONE OF TERRITORIAL OR CONSULAR AUTHORITIES OR DELEGATES.

Each Signatory Power undertakes to appoint in the zone territorial or Consular authorities, or Special Delegates competent to act in the above-mentioned cases; and to notify such appointments to the International Information Office.

SUSPECTED VESSELS TO BE HANDED OVER TO CRUIZER OF THEIR OWN NATION.

The suspected vessel can also be handed over to a cruizer of it own nation, if the latter consents to take charge of it.

+ See Protocol . Ratifications, 2nd July, 1891, 2nd January, 1892, 2nd February, 1892, and 30th March, 1892, pp. 520 to 528. French Reservations, p. 524.

3. Examination and Trial of Vessels seized.

INVESTIGATION BY COMPETENT AUTHORITY.

Art. L.[+] - The authority referred to in the preceding Article, to whom the detained vessel has been handed over shall proceed to make a full investigation, according to the laws and rules of his country, in the presence of an officer belonging to the foreign cruizer.

FRAUDULENT USE OF FLAG.

Art. LI.[+] - If it is proved by the inquiry that the flag has been fraudulently used, the detained vessel shall remain at the disposal of its captor.

SLAVES ON BOARD FOR SALE OR OTHER SLAVE TRADE OFFENCE.

Art. LII.[+] - If the examination shows an act of Slave Trade, made clear by the presence on board of slaves destined for sale, or by any other Slave Trade offence provided for by special Convention, the vessel and cargo shall remain sequestrated in charge of the authority who has directed the inquiry.

DISPOSAL OF CAPTAIN, CREW, AND SLAVES.

The captain and crew shall be handed over to the Tribunals fixed by Articles LIV and LVI. The slaves shall be set at liberty as soon as judgement has been delivered.

LIBERATED SLAVES.

In the cases provided for by this Article, liberated slaves shall be disposed of in accordance with the special Conventions concluded, or which may be concluded, between the Signatory Powers. In default of such Conventions, the said slaves may be handed over to the local authority to be sent back, if possible, to their country of origin; if not, such authority shall help them so far as possible to obtain means of subsistence, and, if they desire it to settle on the spot.

VESSEL ILLEGALLY DETAINED.

Art. LIII. [+] - If it should be proved by the inquiry that the vessel has been illegally detained, a right will accrue to an indemnity in proportion to the damages suffered by the vessel being taken out of its course. The amount of this indemnity shall be fixed by the authority which has directed the inquiry.

APPEAL TO TRIBUNALS.

Art. LIV.[+] - In case the officer of the capturing vessel should not accept the conclusions of the inquiry carried on in his presence the matter shall, as a matter of course, be handed over to the Tribunal of the nation under whose flag the captured vessel sailed.

+ See Protocols. Ratifications, 2nd July, 1891, 2nd January, 1892, 2nd February, 1892, and 30th March, 1892, pp. 520 to 528. French Reservations, p. 524.

No exception shall be made to this rule unless the disagreement arises in respect of the amount of the indemnity provided for in Article LIII, when it shall be fixed by arbitration, as specified in the following Article.

APPOINTMENT OF ARBITRATORS AND UMPIRE.

Art. LV.+ - The capturing officer and the authority which has directed the inquiry, shall each appoint an Arbitrator within 48 hours; and the two Arbitrators shall have 24 hours to choose an Umpire. The Arbitrators shall, as far as possible, be chosenfrom among the Diplomatic, Consular, or Judicial officers of the Signatory Powers. Natives in the pay of the Contracting Governments are formally excluded. The decision shall be taken by majority of votes, and shall be considered final. If the Court of Arbitration is not constituted within the time indicated, the procedure in respect of indemnity and damages shall be in accordance with the provisions of Article LVIII, paragraph 2.

TRIBUNAL TO BE REFERRED TO OF NATION WHOSE COLOURS HAVE BEEN USED.

Art. LVI.+ - Cases shall be referred with the least possible delay to the Tribunal of the nation whose colours have been used by the accused. Nevertheless, Consuls or any other authority of the same nation as the accused especially commissioned to that effect may be authorized by their Government to deliver judgement instead and in the place of the Tribunals.

PROCEDURE AND JUDGEMENT.

Art. LVII.+ - The procedure and judgement in regard to offences against the provisions of Chapter III shall always take place in as summary a manner as is permitted by the Laws and Regulations in force in the territories subject to the authority of the Signatory Powers.

EXECUTION OF JUDGEMENTS.

Art. LVIII.+ - Any judgement of the national Tribunal or of the authorities referred to in Article LVI, declaring that the detained vessel did not carry on Slave Trade shall be immediately executed, and the vessel shall be entirely free to continue its course.

In such cases the captain or fitter-out of a vessel detained without legitimate ground of suspicion, or which has been subject to annoyance, shall have the right of claiming damages, the amount of which shall be fixed by agreement between the Governments directly interested, or by arbitration, and shall be paid within a period of six months from the date of the judgement acquitting the captured vessel.

+ See Protocols. Ratifications, 2nd July, 1891, 2nd January, 1892, 2nd February, 1892, and 30th March, 1892, pp. 520 to 528. French Reservations, p. 524.

CONDEMNATION OF VESSEL. LAWFUL PRIZE.

Art. LIX.+ - In case of condemnation, the sequestered vessel shall be declared a lawful prize for the benefit of the captor.

PUNISHMENT OF CAPTAIN, CREW, AND OTHERS.

The captain, crew, and all other persons found guilty shall be punished according to the gravity of the crimes or offences committed by them, and in accordance with Article V.

SPECIAL AND OTHER TRIBUNALS.

Art. LX.+ - The provisions of Articles L to LIX do not affect in any way the jurisdiction or procedure of existing special Tribunals, or of those which may hereafter be formed to take cognizance of Slave Trade offences.

INSTRUCTIONS TO NAVAL COMMANDERS.

Art. LXI.+ - The High Contracting Parties undertake to make known to each other reciprocally the instructions which they may give to the commanders of their men-of-war navigating the seas of the zone referred to, for carrying out the provisions of Chapter III.

CHAP. IV. - COUNTRIES TO WHICH SLAVES ARE SENT, THE INSTITUTIONS OF WHICH RECOGNIZE THE EXISTENCE OF DOMESTIC SLAVERY.

IMPORTATION, TRANSIT, AND EXIT, AND TRAFFIC IN SLAVES TO BE PROHIBITED.

Art. LXII. - The Contracting Powers whose institutions recognize the existence of domestic slavery, and whose possessions, whether in or out of Africa, consequently serve, in spite of the vigilance of the authorities, as places of destination for African slaves, engage to prohibit the importation, transit, and exit, as well as traffic in slaves. They shall organize the most active and the strictest supervision at all places where the arrival, transit, or exit of African slaves takes place.

LIBERATED SLAVES.

Art. LXIII. - Slaves liberated under the provisions of the preceding Article shall, if circumstances permit, be sent back to the country from whence they came. In all cases they shall receive letters of freedom from the competent authorities, and shall be entitled to their protection and assistance for the purpose of obtaining means of subsistence.

FUGITIVE SLAVES.

Art. LXIV. - Every fugitive slave arriving at the frontier of any of the Powers mentioned in Article LXII shall be considered free, and shall have the right to

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+ See Protocols. Ratifications, 2nd July, 1891, 2nd January, 1892, 2nd February, 1892, and 30th March, 1892, pp. 520 to 528. French Reservations, p. 524.

Best copy available

claim letters of freedom from the competent authorities.

SALES, &c., NULL AND VOID.

Art. LXV. - Any sale or transaction to which the slaves referred to in Articles LXIII and LXIV may have been subjected through circumstances of any kind whatsoever shall be considered as null and void.

SLAVES ON BOARD NATIVE VESSELS.

Art. LXVI. - Native vessels flying the flag of one of the countries mentioned in Article LXII, if there is any indication that they are employed in Slave Trade operations, shall be subjected by the local authorities in the ports they frequent to a strict verification of their crew and passengers, both on arrival and departure. Should African slaves be on board, judicial proceedings shall be taken against the vessel and against all persons who may be implicated. Slaves found on board shall receive letters of freedom through the authorities who affected the seizure of the vessels.

PENAL PROVISIONS.

Art. LXVII. - Penal provisions in harmony with those provided for by Article V shall be issued against persons importing, transporting, and trading in African slaves, against the mutilators of children or of male adults, and those who traffic in them, as well as against their associates and accomplices.

OTTOMAN LAW AGAINST NEGRO SLAVE TRADE.

Art. LXVIII. - The Signatory Powers recognize the great importance of the Law respecting the prohibition of the Negro Slave Trade sanctioned by His Majesty the Emperor of the Ottomans on the 4th (16th) December, 1889 (22 Rebi-ul-Akhir, 1307), + and they are assured that an active supervision will be organized by the Ottoman authorities, especially on the west coast of Arabia and on the routes which place this coast in communication with the other possessions of His Imperial Majesty in Asia.

PERSIAN SUPERVISION IN ITS TERRITORIAL WATERS, INLAND ROUTES, &c.

Art. LXIX. - His Majesty the Shah of Persia consents to organize an active supervision in the territorial waters, and on those portions of the coast of the Persian Gulf and Gulf of Oman which are under his sovereignty, and over the inland routes which serve for the transport of slaves. The Magistrates and other authorities shall receive the necessary powers for this purpose.

+ See Turkey, p. 1197.

STEPS TO BE TAKEN BY SULTAN OF ZANZIBAR.

Art. LXX. - His Highness the Sultan of Zanzibar consents to give his most effective support for the repression of crimes and offences committed by traders in African slaves on land as well as at sea. The Tribunals created for this purpose in the Sultanate of Zanzibar shall strictly apply to the penal provisions mentioned in Article V.

ESTABLISHMENT OF A LIBERATION OFFICE IN ZANZIBAR.

In order the better to ensure the freedom of liberated slaves, both in virtue of the provisions of the present General Act and of the Decrees issued in this matter by His Highness and his predecessors, a Liberation Office shall be established at Zanzibar.

DIPLOMATIC, CONSULAR, AND NAVAL ASSISTANCE TO LOCAL AUTHORITIES.

Art. LXXI. - Diplomatic and Consular Agents and naval officers of the Contracting Powers shall, within the limits of existing Conventions, give their assistance to the local authorities in order to assist in repressing the Slave Trade where it still exists.

PRESENCE AT SLAVE TRADING TRIALS.

They shall be entitled to be present at trials for slave trading brought about at their instance, without, however, being entitled to take part in the deliberations.

LIBERATION OFFICES.

Art. LXXII. - Liberation offices, or institutions in lieu thereof, shall be organized by the Administrations of the countries to which African slaves are sent, for the purposes specified in Article XVIII.

PERIODICAL EXCHANGE OF STATISTICAL DATA.

Art. LXXIII. - The Signatory Powers having undertaken to communicate to each other all information useful for the repression of the Slave Trade,+ the Governments whom the present Chapter concerns shall periodically exchange with the other Governments statistical data relating to slaves detained and liberated, as well as the legislative and administrative measures taken for suppressing the Slave Trade.

+ See Article XXVI, p. 500.

CHAP. V. - INSTITUTIONS INTENDED TO INSURE THE EXECUTION OF THE GENERAL ACT.

§ I. The International Maritime Office.

INSTITUTION AT ZANZIBAR. REPRESENTATIVES.

Art. LXXIV. - In accordance with the provisions of Article XXVII, an International Office is instituted at Zanzibar, in which each of the Signatory Powers may be represented by a Delegate.

CONSTITUTION. REGULATIONS.

Art. LXXV. - The Office shall be constituted as soon as three Powers have appointed their Representatives.

It shall draw up Regulations fixing the mode of exercising its functions. These Regulations shall immediately be submitted for the approval of those Signatory Powers who shall have notified their intention of being represented in the Office, and who shall come to a decision with regard to them with the least possible delay.

EXPENSES.

Art. LXXVI. - The expenses of this institution shall be divided in equal parts among the Signatory Powers mentioned in the preceding Article.

OBJECT. CENTRALIZATION OF DOCUMENTS AND INFORMATION. REPRESSION OF THE SLAVE TRADE IN THE MARITIME ZONE.

Art. LXXVII. - The object of the Office at Zanzibar shall be to centralize all documents and information of a nature to facilitate the repression of the Slave Trade in the maritime zone. For this purpose the Signatory Powers undertake to forward to it within the shortest possible time :-

1. The documents specified in Article XLI.
2. Summaries of the Reports and copies of the Minutes referred to in Article XLVIII.
3. The list of territorial or Consular authorities and Special Delegates competent to take action as regards detained vessels, according to the terms of Article XLIX.
4. Copies of Judgements and Decrees of Condemnation delivered in accordance with Article XVIII.
5. All information likely to lead to the discovery of persons engaged in the Slave Trade in the above-mentioned zone.

ARCHIVES ACCESSIBLE TO NAVAL OFFICERS AND OTHERS.

Art. LXXVIII. - The archives of the Office shall always be open to naval officers of the Signatory Powers authorized to act within the limits of the zone defined in Article XXI as well as to the territorial or judicial authorities, and to Consuls specially appointed by their Governments.

TRANSLATIONS OF DOCUMENTS.

The Office shall supply to foreign officers and agents authorized to consult its archives translations in a European language of documents written in an Oriental language. It shall make the communications provided for in Article XLVIII.

AUXILIARY OFFICES.

Art. LXXIX. - Auxiliary Offices in communication with the Office at Zanzibar may be established in certain parts of the zone, on agreement beforehand between the interested Powers.

They shall be composed of Delegates of such Powers, and established in conformity with Articles LXXV, LXXVI, and LXXVIII.

DOCUMENTS AND INFORMATION, WHERE TO BE FORWARDED.

The documents and information specified in Article LXXVII, so far as they relate to the part of the zone specially concerned, shall be sent to them direct by the territorial and Consular authorities of the region in question, without prejudice to the communication to the Zanzibar Office provided for by the same Article.

ANNUAL REPORTS TO BE PREPARED

Art. LXXX. - The Office at Zanzibar shall draw up within the two first months of every year, a Report upon its own operations, and those of the auxiliary Offices, during the past year.

§ II. Exchange between the respective Governments of Documents and Information relating to the Slave Trade.+

INTERNATIONAL COMMUNICATIONS.

Art. LXXXI. - The Powers shall communicate to each other to the fullest extent, and with the least delay which they shall consider possible -

LAWS AND REGULATIONS.

1. The text of the Laws and administrative Regulations, whether already existing, or enacted in application of the clauses of the present General Act.

+ See "Documents relatifs à la répression de la Traite des Esclaves, publiés en exécution des Article LXXXI, et suivants de l'Acte Général de Bruxelles, 1892" issued by the Brussels Office, respecting the Slave Trade at Zanzibar. A copy of the volume containing these documents was placed in the Library of each House of Parliament.

STATISTICAL INFORMATION.

2. Statistical information concerning the Slave Trade, slaves detained and liberated, and the traffic in arms, ammunition, and spirituous liquors.

CENTRAL OFFICE AT BRUSSELS.

Art. LXXXII. - The exchange of these documents and information shall be centralized in a special office attached to the Foreign Office in Brussels.

INFORMATION TO BE SUPPLIED BY OFFICE AT ZANZIBAR.

Art. LXXXIIII. - The Office at Zanzibar shall forward to it every year the report mentioned in Article LXXX upon its operations during the past year, and upon those of the auxiliary offices which may have been established in accordance with Article LXXIX.

INFORMATION TO BE PUBLISHED AND COMMUNICATED TO THE POWERS.

Art. LXXXIV. - The documents and information shall be collected and published, periodically, and addressed to all the Signatory Powers. This publication shall be accompanied every year by an analytical table of the legislative, administrative, and statistical documents mentioned in Articles LXXXI and LXXXIII.

EXPENSES TO BE SHARED BY SIGNATORY POWERS.

Art. LXXXV. - The office expenses and the expenditure incurred for correspondence, translation, and printing shall be shared by all the Signatory Powers, and shall be recovered through the Foreign Office at Brussels.

§.III. Protection of Liberated Slaves.

ESTABLISHMENT OF OFFICES OR INSTITUTIONS.

Art. LXXXVI. - The Signatory Powers, having recognized the duty of protecting liberated slaves in their respective possessions, undertake to establish, if they should not already exist in the ports of the zone determined by Article XXI and in such parts of their said Possessions as may be places for the capture, passage, and arrival of African slaves, as many Offices or institutions as they may deem sufficient, the business of which will specially consist in freeing and protecting the slaves in accordance with the provisions of Articles VI, XVIII, LII, LXIII, and LXVI.

LETTERS OF FREEDOM. REGISTERS.

Art. LXXXVII. - Such Offices, or the authorities charged with this service, shall deliver letters of freedom, and keep a register thereof.

LIBERATION OF SLAVES AND PUNISHMENT OF OFFENDERS.

On receiving notice of an act of Slave Trade or of illegal detention, or at the instance of the slaves themselves, the said Offices or authorities shall exercise all necessary diligence to insure the liberation of the slaves and the punishment of the offenders.

LEGAL PROCEDURE AGAINST SLAVES ACCUSED OF CRIME.

The delivery of letters of freedom should in no case be delayed if the slave be accused of a crime or offence against common law. But after the delivery of the said letters, the ordinary legal procedure shall take its course.

REFUGES FOR WOMEN. EDUCATION OF CHILDREN.

Art. LXXXVIII. - The Signatory Power shall encourage the foundation in their Possessions of establishments of refuge for women and of education for liberated children.

ACCESS OF FREE SLAVES TO OFFICES.

Art. LXXXIX. - Freed slaves shall always be able to resort to the Offices to be protected in the enjoyment of their liberty.

PUNISHMENT FOR DEPRIVING LIBERATED SLAVES OF THEIR LETTERS OF FREEDOM OR OF THEIR LIBERTY.

Whoever shall have used fraud or violence to deprive a liberated slave of his letters of freedom or of his liberty shall be considered as a slave-dealer.

CHAP. VI. - RESTRICTIVE MEASURES CONCERNING THE TRAFFIC IN SPIRITUOUS LIQUORS.

ZONE WITHIN WHICH ARTICLES OF ACT RESPECTING SPIRITUOUS LIQUORS SHALL APPLY.

Art. XC. - Justly anxious respecting the moral and material consequences which the abuse of spirituous liquors entails on the native populations the Signatory Powers have agreed to apply the provisions of Articles XCI, XCII, and XCIII within a zone extending from the 20th degree north latitude to the 22nd degree south latitude, and bounded by the Atlantic Ocean on the west, and on the east by the Indian Ocean and its dependencies comprising the islands adjacent to the shore up to 100 marine miles from the coast.* (See also Art. VIII.)

IMPORTATION OF DISTILLED LIQUORS PROHIBITED.

Art. XCI. + - In the regions of this zone where it shall be ascertained that, either on account of religious belief or from other motives, the use of distilled liquors does not exist or has not been developed, the Powers shall prohibit their importation.

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* See General Map of Africa, Map No. 1 in Atlas, or Pouch.

\+ See Notification of 18th June, 1892, respecting Witu, &c., Nyassaland, and Niger Protectorate, p. 364.

MANUFACTURE OF DISTILLED LIQUORS TO BE ALSO PROHIBITED.

The manufacture therein of distilled liquors shall equally be prohibited.

LIMITS OF ZONES TO BE NOTIFIED TO THE POWERS.

Each Power shall determine the limits of the zone of prohibition of alcoholic liquors in its Possessions or Protectorates, and shall be bound to notify the limits thereof to the other Powers within the space of six months.

CASES IN WHICH PROHIBITION CAN BE SUSPENDED.

The above prohibition can only be suspended in the case of limited quantities destined for the consumption of the non-native population, and imported under the system and conditions determined by each Government.

IMPORT DUTIES ON SPIRITUOUS LIQUORS TO BE LEVIED BY NEIGHBOURING STATES.

Art. XCII.- The Powers having Possessions or exercising Protectorates in the regions of the zone which are not placed under the system of prohibition, and into which spirituous liquors are at present either freely imported or pay an import duty of less than 15 fr. per hectolitre up to 50 degrees centigrade, undertake to levy on these spirituous liquors an import duty of 15 fr. per hectolitre up to 50 degrees centigrade for the three years next after the present General Act comes into force. At the expiration of this period the duty may be increased to 25fr. for a fresh period of three years. At the end of the sixth year it shall be submitted to revision, taking as a basis the average results produced by these Tariffs, for the purpose of then fixing, if possible, a minimum duty throughout the whole extent of the zone where the system of prohibition referred to in Article XCI should not be in force.+

The Powers retain the right of maintaining and increasing the duties beyond the minimum fixed by the present article in those regions where they already possess that right.

Art. XCIII. - Distilled liquors manufactured in the regions referred to in Article XCII, and intended for inland consumption, shall be subject to an excise duty.

This excise duty, the collection of which the Powers undertake to insure as far as possible, shall not be lower than the minimum import duty fixed by Art. XCII.

Art. XCIV. - The Signatory Powers which have possessions in Africa contiguous to the zone specified in Article XC undertake to adopt the necessary measures for preventing the introduction of spirituous liquors into the territories of the said zone across their inland frontiers.

Art. XCV. - The Powers shall communicate to each other, through the Office at Brussels, and according to the terms of Chap. V, information relating to the traffic in spirituous liquors within their respective territories.

+ See Convention signed at Brussels on the 8th June, 1899, p. 528.

CHAP. VII. - FINAL PROVISIONS.

REPEAL OF ALL STIPULATIONS OF CONVENTIONS OPPOSED TO THIS ACT.

Art. XCVI. - The present General Act repeals all contrary stipulations of Conventions previously concluded between the Signatory Powers. (See also Art. XXIV, p. 499.)

MODIFICATIONS OR IMPROVEMENT OF ACT.

Art. XCVII. - The Signatory Powers, without prejudice to the stipulations contained in Articles XIV, XXIII, and XCII, reserve the right of introducing into the present General Act later on, and by common agreement, such modifications or improvements as experience may prove to be useful.

PERMISSION TO OTHER POWERS TO ACCEDE. SUBJECT TO CONDITIONS.*

Art. XCVIII. - Powers who have not signed the present General Act shall be allowed to adhere to it.

The Signatory Powers reserve the right to impose the conditions which they may deem necessary on such adhesion.

If no conditions should be stipulated, adhesion implies full acceptance of all the obligations and full admission to all the advantages stipulated by the present General Act.

The Powers shall concert among themselves as to the steps to be taken to procure the adhesion of States whose co-operation may be necessary or useful in order to insure the complete execution of the General Act.

Adhesion shall be affected by a separate Act. It shall be notified through the Diplomatic channel to the Government of His Majesty the King of the Belgians, and by that Government to all the Signatory and adherent States.

RATIFICATIONS.+

Art. XCIX. - The Present General Act shall be ratified within a period which shall be as short as possible, and which shall not in any case exceed one year.

Each Power shall address its ratifications to the Government of His Majesty the King of the Belgians, which shall give notice thereof to all the other Signatory Powers of the present General Act.

The ratifications of all the Powers shall remain deposited in the archives of the Kingdom of Belgium.

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* See footnote, p. 488.

\+ See Protocols. Ratifications, 2nd July, 1891; 2nd January, 1892; 2nd February, 1892, and 30th March, 1892, pp. 520 to 528. French Reservations, p. 524.

As soon as all the ratifications have been produced, or at latest one year after the signature of the present General Act, their deposit shall be recorded in a Protocol which shall be signed by the representatives of all the Powers which have ratified.

A certified copy of this Protocol shall be forwarded to all the Powers interested.

COMMENCEMENT OF ACT.

Art. C. - The present General Act shall come into force in all the Possessions of the Contracting Powers on the 60th day after the date of the Protocol of Deposit provided for in the preceding Article.+

In witness whereof the respective Plenipotentiaries have signed the present General Act, and have thereto affixed their seals.

Done at Brussels the 2nd day of the month of July, 1890.

(Here follow the Signatures.)

Coasting Trade.

Annex to Article XXXIX.

Form of Licence to ply the Coasting Trade on the East Coast of Africa, in conformity with Article XXXIX, p. 503.

DECLARATION RESPECTING IMPORT DUTIES. 2nd July, 1890.

The Powers assembled in Conference at Brussels, who have ratified the General Act of Berlin of the 26th February, 1885 (No. 128), or who have acceded thereto.

After having drawn up and signed in concert, in the General Act of this day, a collection of measures intended to put an end to the Negro Slave Trade by land as well as by sea, and to improve the moral and material conditions of existence of the native races.

Taking into consideration that the execution of the provisions which they have adopted with this object imposes on some of them who have Possessions or Protectorates in the conventional basin of the Congo obligations which absolutely demand new resources to meet them.

Have agreed to make the following Declaration : -

+ Came into force April 2, 1892.

DUTIES ON IMPORTS NOT TO EXCEED 10 PER CENT, AD VALOREM.+

The Signatory or adhering Powers who have Possessions or Protectorates in the said conventional basin of the Congo are authorized, so far as they require any authority for the purpose, to establish therein duties upon imported goods, the scale of which shall not exceed a rate equivalent to 10 per cent, ad valorem at the port of entry.

SPIRITUOUS LIQUORS EXCEPTED.

Always excepting spirituous liquors, which are regulated by the provisions of Chapter VI of the General Act of this day (Articles XC-XCV, pp. 514, 515).

After the signature of the said General Act, negotiations shall be opened between the Powers who have ratified the General Act of Berlin or who have adhered to it, in order to draw up, within the maximum limit of 10 per cent, ad valorem, the conditions of the Customs system to be established in the conventional basin of the Congo :-

Nevertheless, it is understood : -

NO DIFFERENTIAL TREATMENT OR TRANSIT DUTIES TO BE ESTABLISHED.

1. That no differential treatment or transit duties shall be established;

CUSTOMS FORMALITIES.

2. That in applying the Customs system which may be agreed, each Power will undertake to simplify formalities as much as possible, and to facilitate trade operations;

DURATION OF ARRANGEMENT FOR 15 YEARS.

3. That the arrangement resulting from the proposed negotiations shall remain in force for 15 years from the signature of the present Declaration.+

POSITION OF AFFAIRS AT EXPIRATION OF THAT PERIOD.

At the expiration of this period, and failing a fresh Agreement, the Contracting Powers shall return to the conditions provided for by Article IV of the General Act of Berlin ++(No. 128), retaining the power of imposing duties up to a maximum of 10 per cent, upon goods imported into the conventional basin of the Congo.

+ See Agreement, 22nd December, 1890, p. 518; and British Notification to Treaty Powers, respecting Zanzibar, 22nd June, 1892, p. 312.

* Till 2nd July, 1905.

++ Page 472.

RATIFICATIONS.

The ratifications of the present Declaration shall be exchanged at the same time as those of the General Act of this day.

In witness whereof the undersigned Plenipotentiaries have drawn up the present Declaration, and have affixed thereto their seals.

Done at Brussels, the 2nd day of the month of July, 1890.

(Here follow the Signatures.)

No. 131. - AGREEMENT between the Delegates of Great Britain, Germany, and Italy, respecting the Tariff of the Eastern Zone of the Conventional Basin of the Congo, Signed at Brussels, 22nd December, 1890.

(Translation.)

The undersigned, Sir John Kirk and Mr. M. Gosselin, Delegates of Great Britain; M. le Comte d'Alvensleven and M. W. Göhring, Delegates of Germany; M. le Baron de Renzis and M. A. Bardi, Delegates of Italy, duly authorized to that effect by their repective Governments, in accordance with the provisions of the Declaration signed at Brussels the 2nd July, 1890 (p. 517), as well as of the General Act of the Conference of the same date (No. 130), have agreed to

STUDY ON THE ESTABLISHMENT OF AN INTERGOVERNMENTAL ORGANIZATION TO DEVELOP AND EXPLOIT THE RESOURCES OF THE BASIN OF THE RIVER

ANNEX N° 7.9-3

Convention of St-Germain en Laye, signed on 10 September 1919

revising the General Act of Berlin signed on 26 February 1885, and the General Act and Declaration of Brussels signed on 2 July 1890.

Société des Nations - Recueil des Traités

No. 202 - CONVENTION[1] PORTANT REVISION DE L'ACTE GENERAL[2] DE BERLIN DU 26 FEVRIER 1885 ET DE L'ACTE GENERAL ET DE LA DECLARATION DE BRUXELLES DU 2 JUILLET 1890, SIGNEE A SAINT-GERMAIN-EN-LAYE, LE 10 SEPTEMBRE 1919

Annexe 7-9.3

Texte officiel français communiqué par le Service français de la Société des Nations. L'enregistrement de cette Convention a eu lieu le 9 janvier 1922.

Les Etats-Unis d'Amérique, la Belgique, l'Empire Britannique, la France, l'Italie, le Japon et le Portugal;

Considérant que l'Acte général de la Conférence africaine, signé à Berlin le 26 février 1885, a eu pour objet essentiel de constater l'accord des Puissances relativement aux principes généraux devant guider leur action commerciale et civilisatrice dans les régions, mal connues ou insuffisamment organisées, d'un continent où sévissaient encore l'esclavage et la traite,

Considérant que le régime de la franchise d'entrée, instauré pour vingt ans par l'article 4 dudit Acte, a dû être modifié pour une période provisoire de quinze ans par la Déclaration de Bruxelles du 2 juillet 1890 et que, depuis lors, aucun accord n'est intervenu, malgré les dispositions desdits actes;

Considérant que les territoires intéressés sont actuellement placés sous des autorités reconnues, qu'ils sont dotés d'institutions administratives conformes aux conditions locales et que l'évolution des populations indigènes s'y poursuit progressivement;

Désireux d'assurer par des dispositions appropriées aux exigences modernes l'application des principes généraux de civilisation consacrés par les Actes de Berlin et de Bruxelles,

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1. Le dépôt des ratifications de la Belgique et de l'Empire Britannique a eu lieu le 31 juillet 1920, celui de la France le 23 juillet 1921.
2. De Martens, Nouveau Recueil général des Traités, deuxième série, tome X, page 414.
3. De Martens, Nouveau Recueil général des Traités, deuxième série, tome XVI, page 3.

Ont désigné pour leurs Plénipotentiaires :

LE PRESIDENT DES ETATS-UNIS D'AMERIQUE :

L'Honorable Frank Lyon Polk, Sous-Secrétaire d'Etat ;

L'Honorable Henry White, ancien Ambassadeur extraordinaire et plénipotentiaire des Etats-Unis à Rome et à Paris ;

Le Général Tasker H. Bliss, Représentant militaire des Etats-Unis au Conseil supérieur de Guerre ;

SA MAJESTE LE ROI DES BELGES :

M. Paul Hymans, Ministre des Affaires étrangères, Ministre d'Etat ;

M. Jules Van Den Heuvel, Envoyé extraordinaire et Ministre plénipotentiaire de S.M. le Roi des Belges, Ministre d'Etat ;

M. Emile Vandervelde, Ministre de la Justice, Ministre d'Etat ;

SA MAJESTE LE ROI DU ROYAUME-UNI DE GRANDE-BRETAGNE ET D'IRLANDE ET DES TERRITOIRES BRITANNIQUES AU DELA DES MERS, EMPEREUR DES INDES :

Le Très Honorable Arthur James Balfour, O.M., M.P., Secrétaire d'Etat pour les Affaires étrangères ;

Le Très Honorable Andrew Bonar Law, M.P., Lord du Sceau privé ;

Le Très Honorable Vicomte Milner, G.C.B., G.C.M.G., Secrétaire d'Etat pour les Colonies ;

Le Très Honorable George Nicoll Barnes, M.P., Ministre sans portefeuille ;

Et :

Pour le DOMINION DU CANADA :

L'Honorable Sir Albert Edward Kemp, K.C.M.G., Ministre des Forces d'Outre-Mer ;

Pour le COMMONWEALTH D'AUSTRALIE :

L'Honorable George Foster Pearce, Ministre de la Défense ;

Pour l'UNION SUD-AFRICAINE :

Le Très Honorable Vicomte Milner, G.C.B., G.C.M.G. ;

Pour le DOMINION DE LA NOUVELLE-ZELANDE :

L'Honorable Sir Thomas Mackenzie, K.C.M.G., Haut Commissaire pour la Nouvelle-Zélande dans le Royaume-Uni ;

Pour l'INDE :

Le Très Honorable Baron Sinha, K.C., Sous-Secrétaire d'Etat pour l'Inde ;

LE PRESIDENT DE LA REPUBLIQUE FRANCAISE :

M. Georges Clémenceau, Président du Conseil, Ministre de la Guerre ;

M. Stephen Pichon, Ministre des Affaires étrangères ;

M. Louis-Lucien Klotz, Ministre des Finances ;

M. André Tardieu, Commissaire général aux Affaires de Guerre franco-américaines ;

M. Jules Cambon, Ambassadeur de France ;

SA MAJESTE LE ROI D'ITALIE :

L'Honorable Tommaso Tittoni, Sénateur du Royaume, Ministre des Affaires étrangères ;

L'Honorable Vittorio Scialoja, Sénateur du Royaume ;

L'Honorable Maggiorino Ferraris, Sénateur du Royaume ;

L'Honorable Guglielmo Marconi, Sénateur du Royaume ;

L'Honorable Silvio Crespi, Député ;

SA MAJESTE L'EMPEREUR DU JAPON :

Le Vicomte Chinda, Ambassadeur extraordinaire et plénipotentiaire de S.M. l'Empereur du Japon à Londres ;

M.K. Matsui, Ambassadeur extraordinaire et plénipotentiaire de S.M. l'Empereur du Japon, à Paris ;

M.H. Ijuin, Ambassadeur extraordinaire et plénipotentiaire de S.M. l'Empereur du Japon, à Rome ;

LE PRESIDENT DE LA REPUBLIQUE PORTUGAISE :

Le Docteur Affonso Da Costa, ancien Président du Conseil des Ministres ;

Le Docteur Augusto Luiz Viera Soares, ancien Ministre des Affaires étrangères ;

Lesquels, après avoir échangé leurs pleins-pouvoirs, reconnus en bonne et due forme, Ont convenu des dispositions suivantes :

Article I.

Les Puissances signataires s'engagent à maintenir entre leurs ressortissants respectifs et ceux des Etats, Membres de la Société des Nations, qui adhéreront à la présente Convention une complète égalité commerciale dans les territoires placés sous leur autorité dans les limites de l'article premier de l'Acte général de Berlin du 26 février 1885, avec la réserve prévue au dernier alinéa de cet article, rapporté dans l'Annexe ci-jointe.

ANNEXE.

ARTICLE PREMIER DE L'ACTE GENERAL DE BERLIN DU 26 FEVRIER 1885.

Le commerce de toutes les nations jouira d'une complète liberté ;

1. Dans tous les territoires constituant le Bassin du Congo et de ses affluents. Ce bassin est délimité par les crêtes des bassins contigus, à savoir : notamment les bassins du Niari, de l'Ogowe, du Schari et du Nil, au nord ; par la ligne de faite orientale des affluents du lac Tanganyka à l'est ; par les crêtes des bassins du Zambèze et de la Logé au sud. Il embrasse, en conséquence, tous les territoires drainés par le Congo et ses affluents, y compris le lac Tanganyka et ses tributaires orientaux.

2. Dans la zone maritime s'étendant sur l'Océan Atlantique, depuis le parrallèle situé par 2°30 de latitude sud jusqu'à l'embouchure de la Logé.

La limite septentrionale suivra le parallèle situé par 2°30, depuis la côte jusqu'au point où il rencontre le bassin géographique du Congo, en évitant le bassin de l'Ogowe, auquel ne s'appliquent pas les stipulations du présent Acte.

La limite méridionale suivra le cours de la Logé, jusqu'à la source de cette rivière, et se dirigera de là vers l'est, jusqu'à la jonction avec le bassin géographique du Congo.

3. Dans la zone se prolongeant à l'est du bassin du Congo, tel qu'il est délimité ci-dessus, jusqu'à l'Océan Indien, depuis le cinquième degré de latitude nord jusqu'à l'embouchure du Zambèze au sud ; de ce point, la ligne de démarcation suivra le Zambèze jusqu'à 5 milles en amont du confluent du Shiré et continuera par la ligne de faite séparant les eaux qui coulent vers le lac Nyassa des eaux tributaires du Zambèze pour rejoindre, enfin, la ligne de partage des eaux du Zambèze et du Congo.

Il est expréssément entendu qu'en étendant à cette zone orientale le principe de la liberté commerciale, les Puissances représentées à la Conférence ne s'engageant que pour elles-mêmes et que ce principe ne s'appliquera aux territoires appartenant actuellement à quelque Etat indépendant et souverain qu'autant que celui-ci y donnera son consentement. Les Puissances conviennent d'employer leurs bons offices auprès des gouvernements établis sur le littoral africain de la mer des Indes afin d'obtenir ledit consentement et, en tout cas, d'assurer au transit de toutes les nations les conditions les plus favorables.

Article 2.

Les marchandises appartenant aux ressortissants des Puissances signataires et des Etats, Membres de la Société des Nations, qui adhéreront à la présente Convention auront libre accès à l'intérieur des régions visées à l'article premier. Aucun traitement différentiel ne pourra être imposé à ces marchandises, à l'entrée ou à la sortie, le transit demeurant exempt de tous droits, taxes ou redevances autres que ceux perçus pour services rendus.

Les navires battant pavillon d'une desdites Puissances auront également accès à tout le littoral, et à tous les ports maritimes des territoires énumérés à l'article premier, aucun traitement différentiel ne pourra leur être imposé.

Sous réserve de ces dispositions, les Etats intéressés conservent le droit de fixer librement les règles et les tarifs de douane ou de navigation applicables sur leurs territoires.

Article 3.

Sur les territoires visés à l'article et soumis à l'autorité de l'une des Puissances signataires, les ressortissants de ces Puissances ou des Etats Membres de la Société des Nations, qui adhéreront à la présence Convention jouiront de la sécurité et de l'ordre publics, tant pour la protection de leurs personnes et de leurs biens que pour l'acquisition et la transmission de leurs propriétés mobilières et immobilières et pour l'exercice de leur profession, du même traitement et des mêmes droits que les ressortissants de la Puissance exerçant son autorité sur le territoire.

Article 4.

Chaque Etat conserve le droit de disposer librement de ses biens et d'accorder des concessions pour l'exploitation des richesses naturelles du territoire, mais toute réglementation relative à ces objets ne pourra comporter aucun traitement différentiel entre les ressortissants des Puissances signataires et des Etats, Membres de la Société des Nations, qui adhéront à la présente Convention.

Article 5.

La navigation du Niger, de ses embranchements et issues et de tous les fleuves, de leurs embranchements et issues coulant sur les territoires visés à l'article premier, ainsi que la navigation des lacs situés sur ces territoires, sera, sous réserve des dispositions du présent chapitre, entièrement libre, aussi bien pour les navires de commerce que pour le transport des marchandises et des voyageurs.

Les bateaux de toute nature appartenant aux ressortissants des Puissances signataires et des Etats Membres de la Société des Nations, qui adhéreront à la présente Convention sont traités sous tous les rapports, sur le pied d'une parfaite égalité.

Article 6.

La navigation en pourra être assujettie à aucune entrave ni redevance basée sur le seul fait de la navigation.

Elle ne subira aucune obligation d'échelle, d'étape, de dépôt, de rupture de charge ou de relâche forcée.

Il ne sera établi sur les navires aucun péage maritime ni fluvial basé sur le seul fait de la navigation, ni aucun droit de transit sur les marchandises qui se trouvent à bord. Pourront seuls être perçus des taxes ou droits qui auront le caractère de rétribution pour services rendus à la navigation même. Les tarifs de ces taxes ou droits ne comporteront aucun traitement différentiel.

Article 7

Les affluents des fleuves et des lacs visés à l'article 5 seront soumis, à tous égards, au même régime que les fleuves ou les lacs dont ils sont tributaires.

Les routes chemins de fer ou canaux latéraux, qui pourront être établis dans le but spécial de suppléer à l'innavigabilité ou aux imperfections de la voie fluviale sur certaines sections des fleuves et des lacs visés à l'article 5, de leurs affluents, de leurs embranchements et issues, seront considérés, en tant que moyens de communication comme des dépendances de ces fleuves et lacs et seront également ouverts au trafic des ressortissants des Puissances signataires et des Etats Membres de la Société des Nations, qui adhéreront à la présente Convention.

Il ne pourra être perçu sur ces routes, chemins de fer et canaux que des péages qui devront être calculés en tenant compte des dépenses de construction, d'entretien et d'administration, ainsi que du bénéfice équitable dû à l'entreprise. Le taux en devra être maintenu rigoureusement égal pour tous les ressortissants des Puissances signataires et pour ceux des Etats Membres, de la Société des Nations, qui adhéreront à la présente Convention.

Article 8

Chacune des Parties signataires demeurera libre d'établir les règlements qu'elle jugera utiles pour assurer la sécurité et le contrôle de la navigation, étant entendu que ces règlements devront tendre à faciliter autant que possible la circulation des navires de commerce.

Article 9

Dans les sections de fleuves et de leurs affluents, ainsi que sur les lacs dont l'utilisation n'est pas nécessaires à plusieurs Etats riverains, les gouvernements exerçant l'autorité resteront libres, pour le maintien de la sécurité et de l'ordre publics et pour les autres nécessités de l'oeuvre civilisatrice et coloniale, d'établir tel régime que de besoin ; mais la réglementation ne pourra comporter aucun traitement différentiel entre les navires ou entre les ressortissants des Puissances signataires et des Etats Membres de la Société des Nations, qui adhéreront à la présente Convention.

Article 10

Les Puissances signataires reconnaissent l'obligation de maintenir, dans les régions relevant de leur autorité, l'existence d'un pouvoir et de moyens de police suffisants pour assurer la protection des personnes et des biens et le cas échéant la liberté du commerce et du transit.

Article 11

Les Puissances signataires, exerçant des droits de souveraineté ou une autorité dans les territoires africains, continueront à veiller à la conservation des populations indigènes, ainsi qu'à l'amélioration de leurs conditions morales et matérielles ; elles s'efforceront, en particulier, d'assurer la suppression complète de l'esclavage sous toutes ses formes et de la traite des noirs, sur terre et sur mer

Elles protégeront et favoriseront, sans distinction de nationalité ni de culte, les institutions et les entreprises religieuses, scientifiques ou charitables, créées et organisées par les ressortissants des autres Puissances signataires et qui tendront à conduire les indigènes dans la voie du progrès et de la civilisation. Les missions scientifiques, leur matériel et leurs collections seront également l'objet d'une sollicitude spéciale.

La liberté de conscience et le libre exercice de tous les cultes sont expressément garantie à tous les ressortissants des Puissances signataires et à ceux des Etats Membres de la Société des Nations, qui deviendront parties à la présente et de résider sur le territoire africain, avec faculté de s'y établir pour poursuivre leur oeuvre religieuse.

L'application des dispositions prévues aux deux alinéas précédents ne comportera pas d'autres restrictions que celles qui seront nécessaires au maintien de la sécurité et de l'ordre publics ou qui résulteront de l'application du droit constitutionnel de chacune des Puissances exerçant l'autorité dans les territoires africains.

Article 12

Les Puissances signataires conviennent que s'il venait à s'élever entre elles un différent quelconque touchant l'application de la présente Convention et ne pouvant être réglé par voie de négociations ce différend devra être soumis à un tribunal d'arbitrage conformément aux dispositions du Pacte de la Société des Nations.

Article 13

Sauf les stipulations visées à l'article premier de la présente Convention, l'Acte général de Berlin du 26 février 1885 et l'Acte général de Bruxelles du 2 juillet 1890, ainsi que la Déclaration en date du même jour, seront considérés comme abrogés en tant qu'ils lient entre elles les Puissances qui sont parties à la présente Convention.

Article 14

Pourront adhérer à la présente Convention, les Etats qui exercent l'autorité sur des territoires africains et les autres Etats Membres de la Société des Nations qui étaient parties soit à l'Acte de Berlin, soit à l'Acte de Bruxelles ou à la Déclaration y annexée. Les Puissances signataires feront tous leurs efforts pour obtenir l'adhésion de ces Etats.

Cette adhésion sera signifiée par la voie diplomatique au Gouvernement de la République française et par celui-ci à tous les Etats signataires ou adhérents. Elle portera effet à dater du jour de sa signification au Gouvernement français.

Article 15

Les Puissances signataires se réuniront à l'expiration d'une période de dix ans, à dater de la mise en vigeur de la présente Convention, pour apporter à celle-ci les modifications que l'expérience aura rendues nécessaires.

La présente Convention sera ratifiée le plus tôt possible.

Chaque Puissance adressera sa ratification au Gouvernement français, par les soins duquel il en sera donné avis à toutes les autres Puissantes signataires.

Les ratifications resteront déposées dans les archives du Gouvernement français.

La présente Convention entrera en vigueur pour chaque Puissance signataire, à dater du dépôt de sa ratification et, dès ce moment, cette Puissance sera liée vis-à-vis des autres Puissances ayant déjà procédé au dépôt de leurs ratifications.

Dès la mise en vigueur de la présente Convention, le Gouvernement français adressera une copie certifiée de celle-ci aux Puissances qui, en vertu des Traités de Paix, se sont engagées à reconnaître et agréer ladite Convention et dont le nom sera notifié aux Etats adhérents.

En foi de quoi, les Plénipotentiaires susnommés ont signé la présente Convention.

Fait à Saint-Germain-en-Laye, le dix septembre mil neuf cent dix-neuf, en un seul exemplaire qui restera déposé dans les archives du gouvernement de la République française et dont les expéditions authentiques seront remises à chacune des Puissances signataires.

In faith whereof the above-named Plenipotentiaires have signed the present Convention.

Done at Saint-Germain-en-Laye, the 10th day of September, 1919, in a single copy, which will remain deposited in the archives of the Government of the French Republic, and of which authenticated copies will be sent to each of the Signatory Powers.

(L.S.) FRANK L. POLK
(L.S.) HENRY WHITE
(L.S.) TASKER H. BLISS
(L.S.) HYMANS
(L.S.) J.VAN DEN HEUVEL
(L.S.) E. VANDERVELDE
(L.S.) ARTHUR JAMES BALFOUR
(L.S.)
(L.S.) MILNER
(L.S.) G.N. BARNES
(L.S.) A.E. KEMP
(L.S.) G.F. PEARCE
(L.S.) MILNER
(L.S.) THOS MACKENZIE
(L.S.) SINHA of RAIPUR
(L.S.) G. CLEMENCEAU
(L.S.) S. PICHON
(L.S.) L.L. KLOTZ
(L.S.) ANDRE TARDIEU
(L.S.) JULES CAMBON
(L.S.) TOM TITTONI
(L.S.) VITTORIO SCIALOJA
(L.S.) MAGGIORINO FERRARIS
(L.S.) GUGLIELMO MARCONI
(L.S.) S. CHINDA
(L.S.) K. MATSUI
(L.S.) H. IJUIN
(L.S.) AFFONSO COSTA
(L.S.) AUGUSTO SOARES

Pour copie certifiée conforme :
Pour le Ministre des Affaires étrangères :
Le Ministre plénipotentiaire,
Chef du Service du Protocole
(Signé) P. De Fouquières.

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